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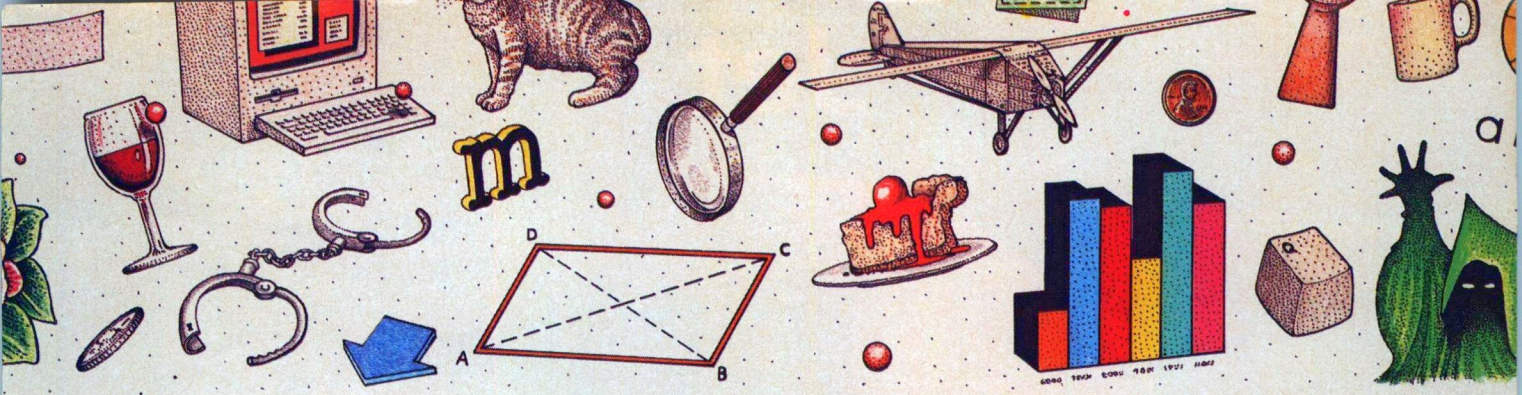

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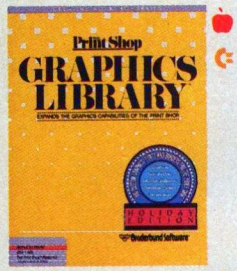

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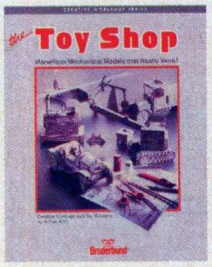

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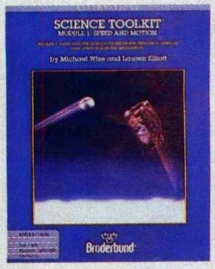

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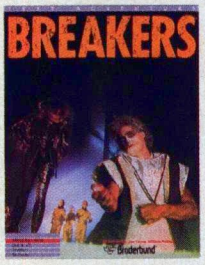

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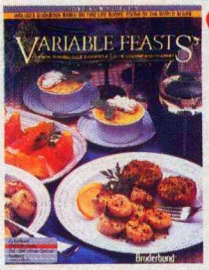

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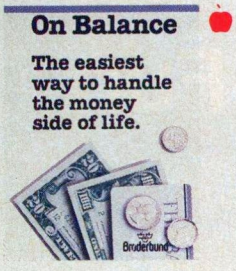

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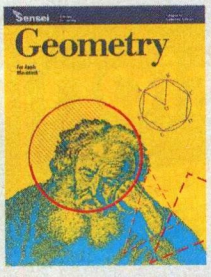

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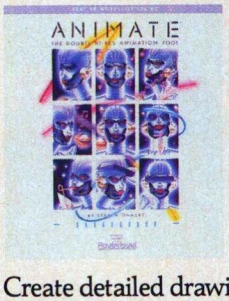

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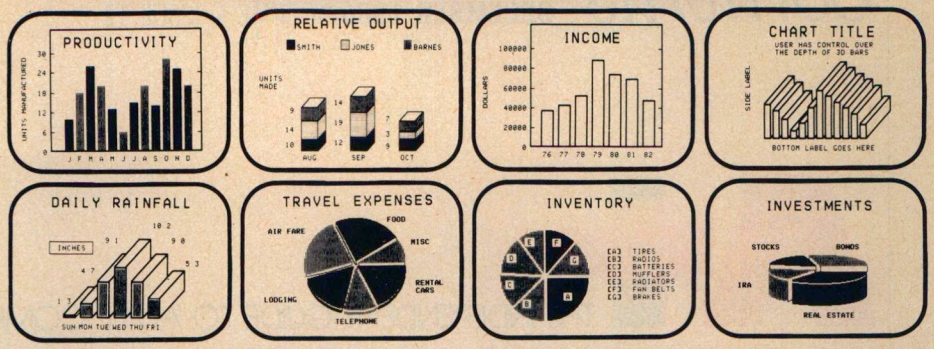

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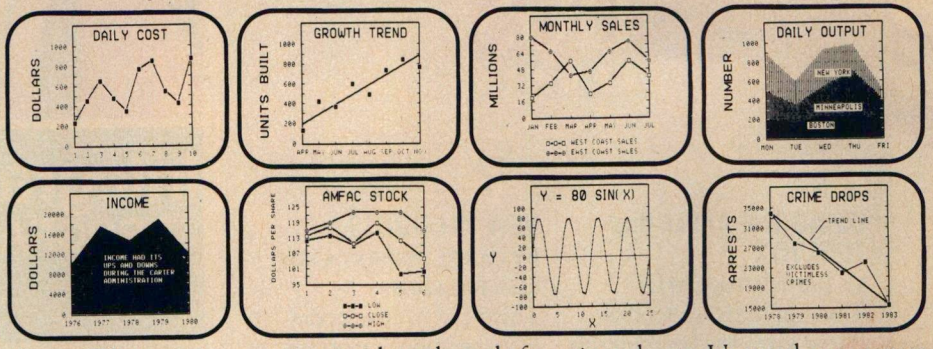

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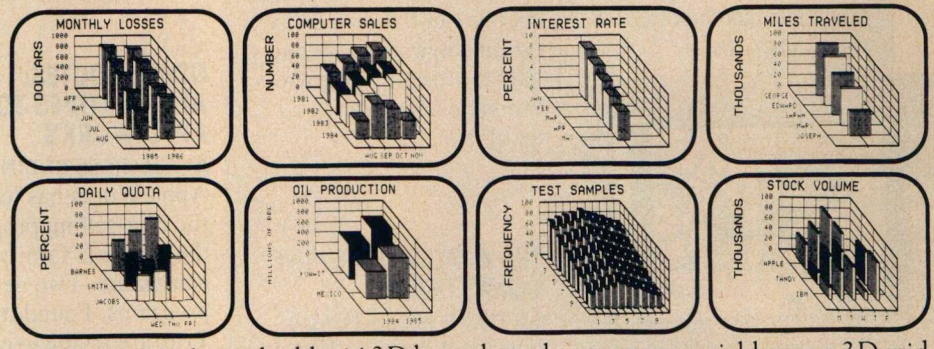

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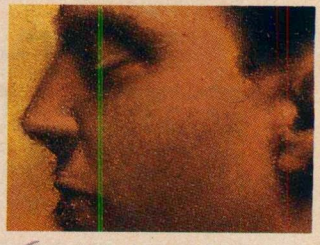

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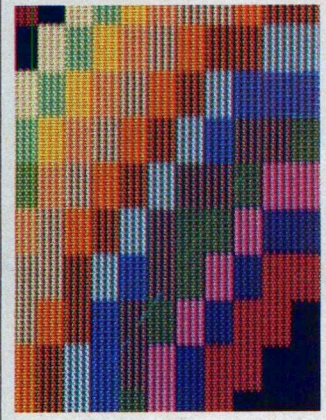

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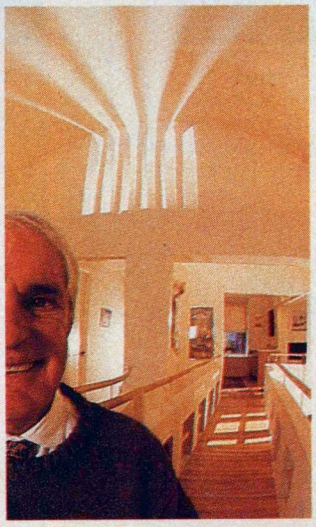

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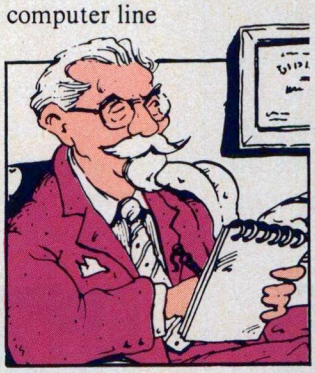

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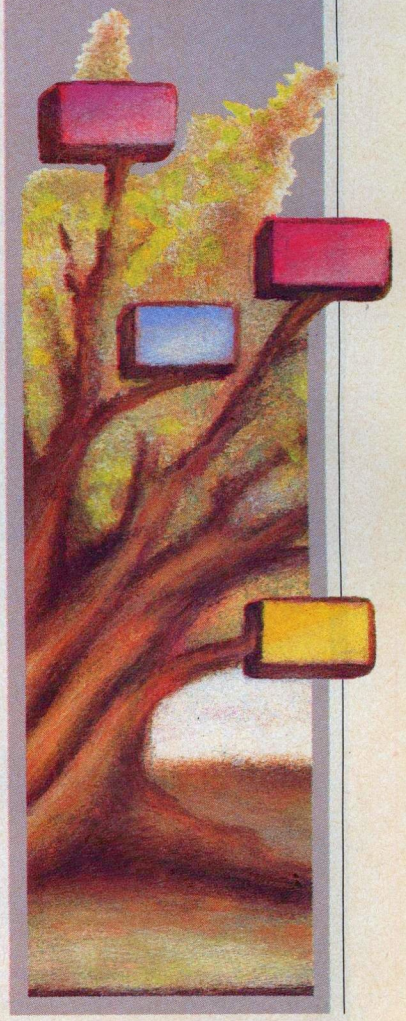

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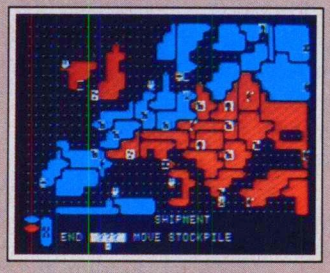

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How to order: Visit your retailer. If you are unable to find the product at your local retailer, you can call 800-245-4525 for direct VISA or Mastercard orders (in CA call 800-562-1112). The direct price is $32.95 for the Commodore version. Apple and Atari versions coming soon. To buy by mail, send check or money order to Electronic Arts Direct Sales, P.O. Box 7530, San Mateo, CA 94403. Add $5 for shipping and handling ($7 Canadian). Allow 4 weeks for delivery. There is a 14-day, money-back guarantee on direct orders. For a complete product catalog, send 50¢ and a stamped, self-addressed envelope to Electronic Arts Catalog, 1820 Gateway Drive, San Mateo, CA 94404. RISK is a registered trademark of Parker Brothers Co. Commodore is a registered trademark of Commodore Business Machines. Apple is a registered trademark of Apple computers. Atari is a registered trademark of Atari. Borderlands and Cosmic Encounter are registered trademarks of EON Software. Lords of Conquest and Electronic Arts are registered trademarks of Electronic Arts.

Lords of Conquest is based on the board game "Borderlands™" by EON—the creators of "Cosmic Encounter.™"

CIRCLE 168 ON READER SERVICE CARD

GS: GREAT SOFTWARE

Apple staged the announcement of its new IIGS with the company's usual flair. It created a slick and elaborate music video to the tune of Huey Lewis & the News' pop hit "The Heart of Rock and Roll," with lyrics such as ". . . the heart of Apple II is still beating." Apple bigwigs John Sculley, Del Yocam, and Steve Wozniak were dressed down in the archetypal Silicon Valley casual style. Del and Woz kidded and cajoled as they presented a humorous patter that heralded the latest scion of the Apple II dynasty. As the presentation built to a climax, a large radio-controlled flying saucer flew out from backstage carrying a neon model of the IIGS, as the real Apple IIGS made its debut at center stage.

Now that the rollout is over, it's a good time to ponder what the machine will mean to Apple, to the personal-computer industry, and to users. The IIGS is important to Apple because it gives the company a sexy new computer to help stimulate the consumer market. The 8-bit Apple II series is still a utilitarian workhorse that will continue to have a solid place in education, small business, and other markets where low cost and reliability are important, but the older Apple IIs lack the excitement and appeal of second-generation computers such as the Macintosh, Commodore Amiga, and Atari ST.

The Apple II line sorely needed a technology update, and Apple responded by giving the Apple IIGS a big dose of its premier software technology, the Macintosh user interface. The IIGS gives Apple a contender at the high end of the consumer and education markets that can outperform the low-cost IBM PC clones. It has enough hardware horsepower to let its users explore new realms of personal computing such as advanced entertainment software with realistic graphics and sound effects, sophisticated personal productivity programs, and CD-ROM technology.

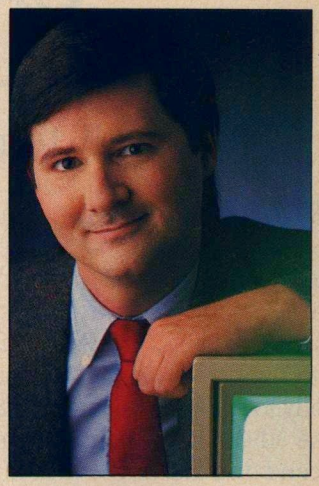
The IIGS's impact on the computer industry is hard to predict, but indications are that Apple has a big winner on its hands that may fatally wound Commodore's Amiga. The Atari ST will probably be hurt by the IIGS, but not as badly as the Amiga. The ST is an inexpensive computer that will still appeal to people who are enthusiasts of the Motorola 68000 chip, have limited budgets, and are willing to take a risk on Atari. I've been talking with leading third-party developers, and their outlook on the IIGS is optimistic. Developers are happy that Apple has created a capable machine for the consumer market; they feel that the IIGS will let them create second-generation software that will attract many new customers.

Computer users will also realize significant benefits from the IIGS. The improved color graphics and superior sound offer programmers rich resources for creating new software that will surely be more fun to use than what is available for 8-bit Apple IIs or PC clones. The Macintosh-like user interface will make the IIGS as easy to use as the Mac, and, unlike the Mac, the IIGS can be souped up through the use of add-in boards. Current Apple II users who upgrade to the new technology will benefit because they will be able to run most of their existing software and use most of their existing hardware. If they are lucky enough to own an Apple IIe, they can upgrade to the IIGS for a very reasonable price.

The IIGS looks like it will help reinforce the "Apple II Forever" theme by extending the legendary lifespan of the microcomputer industry's progenitor, the Apple II. Although the IIGS hardware may not be the absolute state of the art, it is the software that determines what the computer can actually do. Because of the high level of enthusiasm and support that software developers are expressing for the IIGS, I'm confident that GS will come to stand not just for *graphics* and *sound*, but for *great software* as well. +

Fred

FREDERIC E. DAVIS/**EDITOR IN CHIEF**



The IIGS gives Apple a contender at the high end of the consumer and education markets that can outperform the low-cost IBM PC clones.

EXPAND Your Laser 128

16 bit processor, 1 meg RAM boards, 3½ inch drives...

One of the reasons you bought your Laser 128 personal computer is its expansion capability. You knew that a computer without expansion slots is a dead-end that stays behind as technology advances. Now you're ready to expand your Laser 128 to take advantage of extra memory, second disk drives, 3½ inch 800K drives, 16 bit processors, and more...

Expansion Box

The optimum way to take advantage of the Laser 128's expansion slot. The Laser 128 Expansion Box gives your Laser two fully protected, shielded, standard Apple compatible expansion slots (slots 5 and 7). It even includes its own power supply for power-hungry cards and a safety interlock switch that disconnects the 12 volt power supply if the cover is opened. Its solid metal construction insures that even a fully-expanded Laser 128 won't interfere with radio or television equipment. Best of all, its two full-length slots will accept virtually any Apple-compatible expansion card at a price that won't break your budget. **$79.95**

800K, 3½" Drives

Add 800K of Apple Unidisk 3.5™ compatible storage to your Laser 128 and pocket over $180 in savings! Our Universal Disk Controller™ accepts two drives and you can even mix and match 5¼" and 3½" drives. And disks made with the Universal Disk Controller are fully interchangeable with Apple's Unidisk 3.5. Price includes controller card (plugs into Laser 128 Expansion Box) and one 3½" 800K drive (see our other advertisement in this issue). **$285.00**

5¼" Second Disk Drive

Add a second disk drive designed specifically for your Laser 128. It plugs right into the external disk drive port on the Laser 128 and is one of the quietest drives available. **$150.00**

Memory/16 bit Expansion

The Laser 128 Expansion Box works well with the latest Appleworks compatible memory boards from APPLIED ENGINEERING (RAMFACTOR), and several others. We now stock Applied Engineering's RAMFACTOR board with 256K memory installed. For a limited time, buy a RAMFACTOR, and we'll give you the Laser 128 Expansion Box, **free!** We also stock the Applied Engineering Transwarp Accelerator card with the 16 bit option to run your Laser 128 3½ times faster. See Applied Engineering's ads for more information.

Laser 128

The Apple //e compatible computer that brings you the best of all worlds: Transportable like the //c, expandable like the //e, but priced like a Commodore 128! No wonder **A+ magazine calls the Laser 128 the "clear winner" of Apple compatibles! $395.00**

Yes, I'm ready to expand my Laser 128! Please send me these items:

- ☐ **Laser 128 Expansion Box**–$79.95 & 6 s/h
- ☐ **Universal Disk Controller and 800K 3½" Disk Drive**–$285 & 10 s/h
- ☐ **Laser 128 5¼" Disk Drive**–$150 & 10 s/h
- ☐ **RAMFACTOR™ with 256K Memory**–Includes Expansion Box - free! $239 & 10 s/h
- ☐ **Transwarp™ Accelerator Card with 16 Bit Processor Option**–$249 & 6 s/h
- ☐ **Laser 128 Computer**–$395 & 20 s/h

And ship them to me at this street address ASAP:

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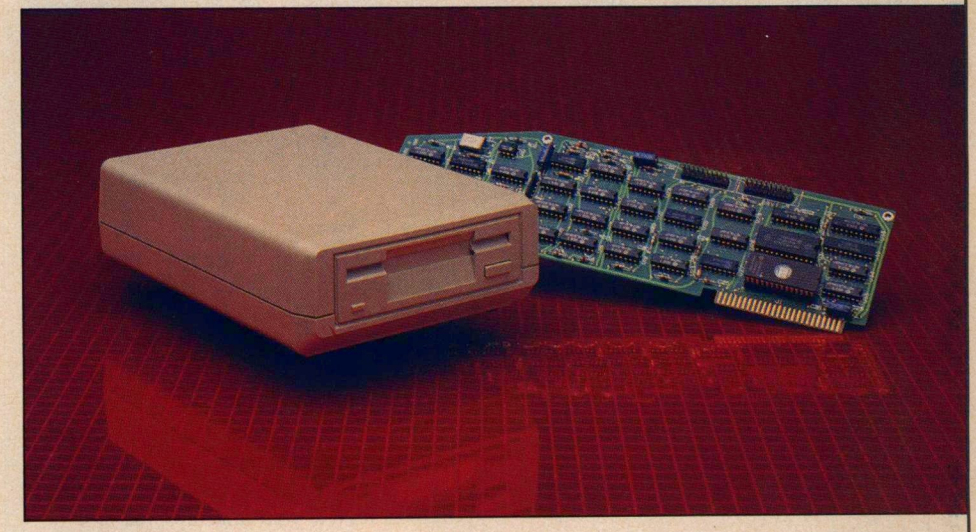
3.5 Inch, 800K Drives

Only $195

Compatible with IIGS, //e, Macintosh and Laser 128!

Now you can add 800K of Apple compatible storage to your Apple at an affordable price. These 3.5 inch drives are functionally identical to Apple's Unidisk 3.5 and Macintosh drives but cost half as much!



Works with an Apple II:

Our 3.5 inch drives connect to an Apple //e, Apple II Plus, Apple IIGS, or Laser 128 via our "Universal Disk Controller." This remarkable interface card allows you to connect two 3.5 inch drives for a total of 1.6 megabytes of Apple Unidisk 3.5 compatible disk storage.

Ideal Drives for IIGS

These are the ideal drives for Apple's new IIGS. Save over $300 on a two-drive combination! If you're upgrading from an Apple II Plus or //e, you can even connect your current 5¼ inch drive without needing adapter cables. (Our Universal Disk Controller supports both 20 pin and DB-19 drive connectors.)

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These 3.5 inch drives directly connect to a Macintosh Plus or Macintosh 512 enhanced computer through the external drive port. No interface card is necessary.

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Call today and order your 3.5 inch disk drives. Find out just how inexpensive it can be to add an 800K disk to your Apple!

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☐ **800K, 3.5 inch drive** for Mac Plus, Macintosh 512 enhanced, Apple II Plus, //e, IIGS, or Laser 128. (Sorry, not available for //c). $195 & $10 s/h ($15 to Canada, $50 overseas)

☐ **Universal Disk Controller card.** (Required to connect 800K drives to Apple II Plus, //e, IIGS, and Laser 128.) Controls 2 3.5 inch drives. Price includes our popular Copy II Plus disk utilities - free! $90

And ship them to me at this street address ASAP:

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Simply send in this order form with a check, or provide your Visa/MC

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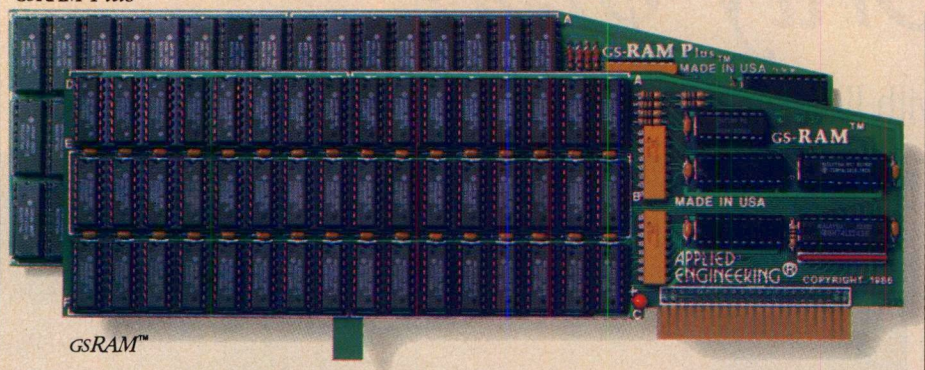
Insist on GSRAM™ When You Buy Your IIGS™

Expand the IIGS RAM and ROM with the GSRAM or GSRAM Plus with ROM Pak. Available now with 256K to 8 MEG!

GSRAM Plus™



GSRAM™

Remember the 16K cards for the II+ and the 64K cards for the IIe? At the time, that much memory seemed like a lot. But when the owners of these memory cards came to us for more memory, many had to throw away their smaller Apple memory cards or try to sell them. Most of our customers told us that had they known about Applied Engineering's larger memory cards when they bought their Apple, they would have purchased them at the same time.

GSRAM and GSRAM Plus are available now, allowing up to 8 MEG of memory expansion. That's 8 times the memory capacity of Apple's card and just look at the benefits that only GSRAM and GSRAM Plus have over Apple's card:

- Lower cost
- Has 6 RAM banks (Apple's card has 4)
- Has memory expansion port
- Has ROM expansion port
- No configuration blocks to set
- No soldered in RAM chips
- Expandable to 8 MEG
- Expands AppleWorks internal limits
- Built-in Hi-Res self-diagnostic software
- 5 year hassle free warranty (Apple has a 90 day warranty)
- Made in USA

GSRAM for More AppleWorks Power

Only GSRAM and GSRAM Plus eliminates AppleWorks internal memory limits, increasing the maximum number of records available from 6,000 to over 25,000 and only GSRAM and GSRAM Plus increases the number of lines permitted in the word processing mode from 6,000 to over 15,000. And only GSRAM and GSRAM Plus offers a built-in printer buffer so you can continue using AppleWorks while your printer is printing. GSRAM and GSRAM Plus even expand the number of lines in the clipboard from 255 to 2047 and will auto segment large files so they can be saved on two or more disks. You can even have Pinpoint or Macroworks and your favorite spelling checker in RAM for instant response. GSRAM and GSRAM Plus will even display the time and date right on the AppleWorks screen. Nothing comes close to enhancing AppleWorks so much.

Turn Your IIGS into a Giant

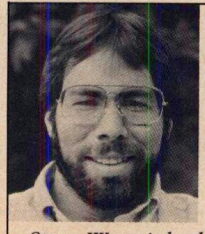
Simply plug GSRAM into the IIGS memory expansion slot and you've got up to *8 megabytes* of RAM at your fingertips—all of it instantly and automatically recognized by the IIGS. GSRAM is compatible with all IIGS software, including AppleWorks, as well as BASIC®, ProDos, DOS 3.3, PASCAL®, "C" and CP/M®.

Grow by Bytes or Megabytes

We offer GSRAM in two configurations so you can increase your memory 256K at a time (GSRAM) or a megabyte at a time (GS-RAM Plus). Both offer full compatibility, lower cost than other boards, and easy expandability. And both are extremely low in power consumption. A fully expanded GSRAM operates at only 375 ma, and GSRAM Plus at only 270 ma (even with 6 megabytes on board!)

GSRAM—for Normal Memory Requirements

GSRAM is available with 256K, 512K, 1 MEG or 1.5 MEG of memory already on board. If you don't need the full 1.5 MEG now, you can choose a GSRAM with less memory and expand it up to 1.5 MEG in the future—or upgrade to GSRAM Plus for a small charge.



"I recommend Applied Engineering products wholeheartedly."

Steve Wozniak, the creator of Apple Computer

With an optional piggyback card, you can expand GSRAM even higher than 1.5 MEG! (Other cards are only expandable to 1 MEG.)

GSRAM Plus—for Growing by Leaps and Bounds

GSRAM Plus is the first Apple memory card to use 1 MEG RAM chips on the main board. It's available with 1 to 6 MEG on board. If you don't need the whole 6 MEG now, you can buy a GSRAM Plus with less memory and easily expand it in the future.

GSRAM Plus can be expanded up to 8 MEG with an optional piggyback card.

Easy Expansion

Both GSRAM and GSRAM Plus use standard RAM chips that are readily available and just plug right in. So unlike other cards, you'll find expanding your GSRAM or GSRAM Plus easy, convenient and very economical. And with our optional ROM expansion module you can even increase the IIGS's ROM space and all in just one slot.

Quality and Support of the Industry Leader

Applied Engineering is the largest supplier of Apple peripherals in the world. We *invented* the first large RAM cards for the Apple. With a 5-year "no-hassle" warranty and outstanding technical support, you can be sure GSRAM and GSRAM Plus will deliver the performance you're looking for—or return them within 15 days for a full refund.

GSRAM with 256K	**$169**
GSRAM with 512K	**$219**
GSRAM with 1 MEG	**$299**
GSRAM with 1.5 MEG	**$379**
GSRAM with 2-8 MEG	**CALL**
GSRAM Plus with 1-8 MEG	**CALL**

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Letters

We invite your comments.

PIRACY CRIPPLES MOTIVATION

Dear *A+*: Kudos to Wendy Sprout for her keen criticism of software piracy, which appeared in your "Letters" section in September. Her eloquent attack on John Reimer's letter in defense of piracy (June 1986) took the words right out of my mouth!

One would think by now that the dozens of software-company failures and lost millions would convey to users the simple fact that software development isn't an easy way for a "capitalist" to make money. Those of us that have persevered and tasted success know how hard we've worked. And at least so far, the successful software designers and publishers are the ones that care about quality and are motivated to set new standards.

Piracy cripples that motivation. You can't imagine how demoralizing it is to labor for months to create a unique invention, only to have many people decide that it is perfectly "moral" for them to take it without paying anything. If it had been as easy to pirate movies in 1930 as it is to pirate software today, maybe the John Reimers of earlier generations would have bankrupted MGM and depressed Walt Disney enough to quit making movies. If I live to have five children and three of them are kidnapped, I won't feel that the kidnappers are "moral" because they feel that I only "need" to have two children.

Thank you for your continued editorial support on this industry-threatening issue.

Trip Hawkins, President
Electronic Arts
San Mateo, CA

FORMAT II TESTIMONIAL

Dear *A+*: I just received my October copy of *A+*, and as usual I have read it through very carefully. Your article on word-processing programs caught my eye. I read not only your magazine but several others as well, and this is the first time in any of them that I have seen anything about Kensington Microware's Format II. I disagree with you on your opinion of it. It doesn't have page wraparound and some other bells and whistles, but it certainly is easy to learn to use. My high-school-aged son uses it for his reports, and I find it very good for my needs, as I write a lot of letters.

I have used WordStar at work, and I find it very difficult to use, with its plethora of commands. In my opinion, it is too complicated. It is a pleasure to get back to something that is very straightforward when I am at home. I don't think that a word processor should be an exercise in mental gymnastics. I believe that it should be a typewriter substitute with ease of correction—or am I being too simplistic?

Roger C. Asman
Livonia, MI

SYLVIA PORTER DEFENDED

Dear *A+*: Your reviewer makes two factual mistakes in your September 1986 issue (pages 32 and 36) in covering the Sylvia Porter's Your Personal Financial Planner consumer software program (published by Timeworks, Inc., Deerfield, Illinois).

First he concludes that our program "tells you a lot about the past and the present, but it doesn't help you plan for the future." The contradictory fact is that a significant portion of the program—and also 32 pages of the manual—are devoted to our exclusive "Financial Planning by Objectives" system. This future planning system has been reviewed favorably in several dozen other leading computer magazines.

Second, the writer states that the program does not tell you "what kinds of investments you should consider, what the risks are, any tax implications, and so on." The fact is that our program is clearly identified and marketed (package, manual, advertising, promotion) as the first in the Sylvia Porter's Personal Finance Series and that the second program in the series is Your Personal Investment Manager, which includes investment strategies and fundamental and technical analyzers (in addition to portfolio tracking, transactions management, deadline alerts, tax monitoring, and telecommunications access to outside database sources).

Arthur H. Rogoff
Executive Editor
Sylvia Porter's Personal Finance
Magazine Company
New York, NY

ALPHAPRO/APPLEWORKS PRINTING SOLUTION

Dear *A+*: I am writing this letter to convey a solution to a printer-software communication problem that is shared by others with the same hardware setup.

Last year I bought an Alphacom Alphapro 101 daisy-wheel printer for my Apple IIc. The printer has worked well for me in all applications *except* AppleWorks. The main difficulty is in getting AppleWorks (Versions 1.0 and 1.2) to successfully communicate printer codes (e.g., boldface) to the printer, which emulates a Diablo 630. Alphacom personnel, whom I have found to be very helpful and cooperative, could not solve this problem, which is painfully common to the company's other customers. The best I've managed thus far is to use the Epson MX printer driver, which works well ex-

cept for lack of print enhancement.

Through trial and error, logic, and celestial inspiration, I finally worked out the solution. What's needed are the manufacturer's interface manual and a complete list of ASCII character codes, such as the one in the *Applesoft BASIC Programmer's Reference Manual*. After setting the printer up as a custom printer, input the printer codes, using *only* the character equivalent of the hexadecimal (or decimal) values listed in the interface manual. Anything else will print out when the file prints. For example, for Subscript Begin, whose code is $1B $55, press the Escape and U (note capital) keys.

A more complete printer manual would have minimized the frustration involved. Also, despite the fact that printer codes are usually different from manufacturer to manufacturer, the AppleWorks manual could have at least given *one* example of code input. After communicating this solution to Alphacom application representatives, I was told that they would most likely issue a bulletin to current Alphapro 101 owners.

R.M. Porter
Orange, TX

WORD JUGGLER ELABORATION

Dear A+: "Write On!" in the October 1986 edition omitted mention of many of the good features of Word Juggler that were cited for other word processors.

Lexicheck, the built-in spelling checker, provides a word count. Word Juggler provides hanging indents and can prevent both widows and orphans with the Need command, which reserves the correct number of lines for a paragraph. If enough extra memory is available, the program can generate both indexes and tables of contents (at the end of the document) by storing the current page number for an occurrence as a variable.

You can specify both starting and ending page numbers for printouts; the number of copies to be printed; and headers and footers, which you can position for odd- and even-numbered pages.

In addition to single, double, and triple spacing, you can use incremental line spacing and other printer features by sending appropriate commands to the printer that is being used. You can also get an unbreakable space simply by using an unneeded special character, which prints as a blank.

Nonprinting comments can be entered wherever you need them. The program can use any of the usual clock cards. The size of a document is not limited to disk capacity. In fact, you can create documents of any size by using the Insert Document command—I have single documents that occupy eight full disks. The output can be quickly previewed before printing.

This is by no means an exhaustive list of the features of Word Juggler. I feel that a very fine product has been severely shortchanged by your article.

Harry B. Bateman
Denver, CO

CORRECTION

The "Further Information" section of our word-processing article in the October issue (page 37) contained two errors. The correct phone number of Software Publishing Corporation is (415) 962-8910, and the correct street address of Artsci, Inc., is 5547 Satsuma Avenue, North Hollywood, CA 91601.

If you feel like a lost soul when it comes to music software, get the bible.

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Detailing over 500 items which range from software to accessories to books, Coda is a remarkably user-friendly catalog that takes the confusion out of searching for the right music software. It's the computer-using musician's best resource today. In fact, if you can't find what you need in Coda, chances are it doesn't exist.

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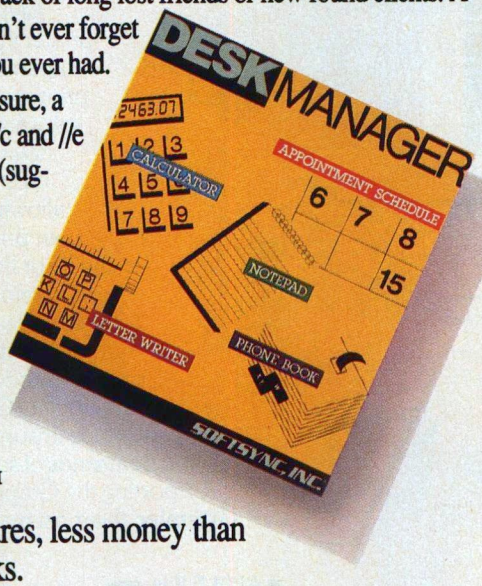
There's three things you should get from software: power, ease of use and a reasonable price. Here's three programs that can give you all the tools you need to get your work done faster, easier and better:

Desk Manager™

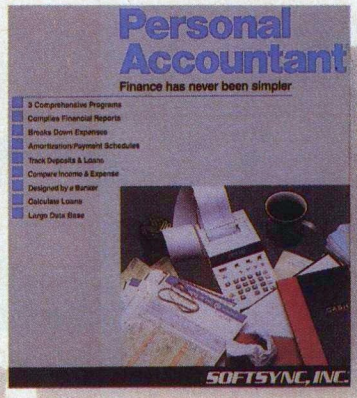
Five tools to organize your desktop.

Desk Manager puts five useful tools in your Apple that you can access instantly. It's a simple word processor that gives you the ability to crank out quick letters without the fancy footwork. An appointment calendar to keep your schedule in order. A phone book for keeping track of long lost friends or new found clients. A note pad so you don't ever forget the greatest idea you ever had. And, for good measure, a calculator. Apple //c and //e with 128K $39.95 (suggested retail price).



Personal Accountant™

Your financial genius.



The Personal Accountant will keep track of your income, expense, loans, and deposits. It will tell you about your net worth, profits, taxes, and even speculate about the future. It generates professional financial statements and account histories. It calculates loans and the future value of savings and it even keeps track of phone numbers. You don't have to know anything about debit and credit to put the Personal Accountant to work for you. And you don't have to be a financial genius to know that this is money well spent. Spend $49.95 to keep your financial life in order and invest the rest. Apple //c and //e (128K).

TRIO™

More features, less money than Appleworks.

The good news is that TRIO gives you the three most important software applications: an easy-to-use word processor, a powerful spreadsheet and a highly flexible data base. The even better news is you can buy TRIO for less than a third of the cost of Appleworks. Plus you get more features: like a very slick mail merge, a form letter maker, the ability to undo mistakes, printer macros and more. Of course, like Appleworks, you'll be able to write dazzlingly fast, project profits, organize lists, and more.TRIO is the most powerful integrated software package you can buy for the money. Apple //c and //e with 128K, $79.95 (suggested retail price).

Five Years In The Making

The fact is Softsync has been developing serious, hard working software for five years now.

We know that software works harder for you when it's well designed, well documented, reasonably priced and backed by a team of customer service specialists standing by to help you.

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CIRCLE 171 ON READER SERVICE CARD

BRIGHT IDEAS

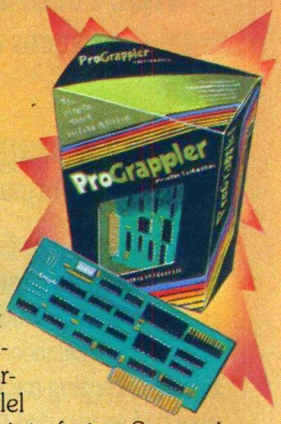
Orange Micro® Innovations for the Apple® IIGS

The Revolution Continues

For over six years Orange Micro has demonstrated an unequalled ability to convert bright ideas into the high quality Apple innovations that you require. Products for the Apple II+, IIe and IIc and most recently the ImageWriter™ II have consistently been top sellers, and have enjoyed the support of experts and software publishers alike. With the new Apple IIGS computer, Orange Micro is again leading the way with three exciting new ideas to enhance your new Apple system.

ProGrappler®

Intelligent Printer Interfacing



Parallel printing is fast, and now the new **ProGrappler** represents the hottest technology in parallel printer interfacing. Screenshot capability (IIGS only) lets you print screens for most popular software packages. New pull-down menus accept either mouse or keyboard input, allowing you to easily select your printing options right on the IIe or IIGS screen. We've also added printer set-up, so you can select your printer's special features without complex commands or special codes. All the commands of the original Grappler+ have been kept intact, ensuring compatibility with the thousands of software products supporting the Grappler. Go with the **ProGrappler**, the most powerful parallel printer interface available.

RamPak 4GS™

Memory Sub-System

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A Commitment to Innovation and Excellence

These high quality products represent Orange Micro's continued commitment to Apple and the landmark Apple II series of computers. Our development efforts are, and have been, totally dedicated to bright ideas for Apple Computers. We've been dedicated to it for years and we aren't going to change now. So when you pick up your IIGS, take a look at us. Enhance your system with solutions from Orange Micro.

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CIRCLE 258 ON READER SERVICE CARD

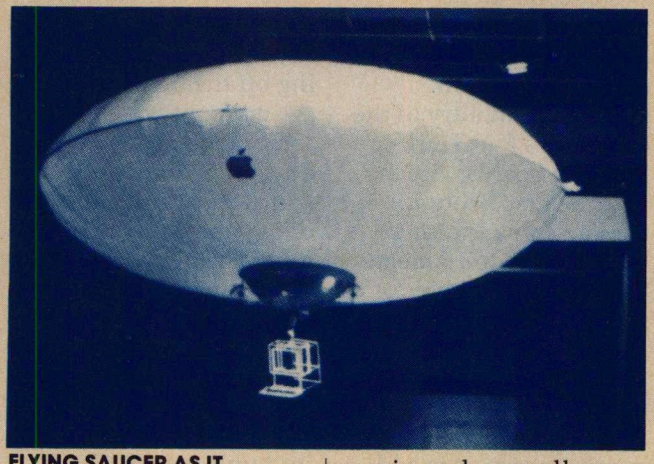
BY LISA RALEIGH AND CHIP CARMAN

NewsPlus

It was plaid shirts at the podium, smoke on stage, and flying saucers overhead at Apple's dramatic IIGS debut.

HOW WILL THEY TOP THIS ONE?

Dress casual, bring earplugs, and watch out for flying saucers. With those three bits of advice, you couldn't go wrong at Apple's pull-out-the-stops introduction of the IIGS. Apple has long favored the "event" approach to unveiling new products, and the IIGS's debut was no exception. Like the introduction of the Macintosh and the IIc before it, this event featured new-wave multimedia slide shows, ear-numbing rock music, and pep-rally speeches from the top brass. But this one might be best remembered for its combination of calculated casualness and high-tech high jinks.

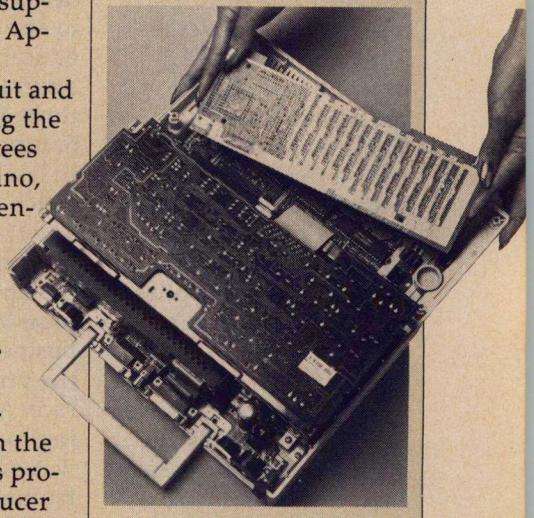


FLYING SAUCER AS IT APPEARED AT AN APPLE SALES MEETING

It was plaid-shirt day at the podium as both Apple Chairman John Sculley and CEO Del Yocam stepped forth looking as if they'd just dropped in from a barbecue. So much for the "buttoned-down" image that Sculley supposedly brought to Apple. In fact, it was difficult to spot a suit and tie anywhere among the 2200 Apple employees gathered at Cupertino, California's Flint Center, a college auditorium in which Apple often holds introductions and annual shareholder meetings. The just-folks approach contrasted sharply with the space-age dramatics provided by a flying saucer 20 feet in diameter. The helium-filled saucer rose from the stage amid smoke and spotlights and floated across the auditorium, bearing a neon, 3-D model of the IIGS. Spotlights shone on the model, casting a shadow of the IIGS on a far wall. Although such spectacles are par for the course when it comes to Apple unveilings, it's hard to imagine how Apple will top this one when it brings out its new Macintosh products next year.

ENHANCED IIc

Apple also introduced an enhanced IIc at its flying-saucer extravaganza. The changes are subtle. The only external difference is that the key caps are now in the new light-gray color of the IIGS. Internally, Apple has redesigned the logic board to accept the new



Apple IIc Memory Expansion Card. This dealer-installable card provides up to one megabyte of extra RAM in increments of 256K. The card costs $269 for the first 256K, and additional increments of 256K are $69 each. For the same $269 price, current IIc owners can get a new logic board and the Memory Expansion Card.

The new AppleWorks 2.0 automatically recognizes the card and lets you create larger documents than before and in-

Guinness Record? The students who created a 1.7-mile banner with their Macs think so.

crease the size of your desktop. You can also use the card to emulate an internal disk drive by creating a RAMdisk.

Applied Engineering and Checkmate Technologies have been selling IIc memory cards for a long time. Not only will these third-party companies now sell their cards to match or undercut Apple's price, but you can also install their cards yourself. The third-party products have several other advantages: Applied Engineering's card has a built-in clock; Checkmate offers a 16-bit option for its card; and both cards have five-year warranties, compared to Apple's 90-day warranty. Each company supplies programs that change AppleWorks 1.1–1.3 to work with its card and ease the size restrictions in each module. By the time you read this issue, both companies will probably also have patch codes that allow AppleWorks 2.0 to recognize their cards.

BANNER EVENT

What can you create with four Macintosh Pluses, a LaserWriter Plus, three boxes of computer paper, 450 students, and Brøderbund's Print Shop software? A 1.7-mile banner, that's what. At least that's what a group of students did at Thurston Middle School in Laguna Beach, California. These students created this banner to announce a business-education partnership program and stretched it through the streets of this Southern California city in last summer's Laguna Beach 10K Classic Race. The students decorated their creation with 200 logos and the names of almost 3000 people and 70 businesses involved in the program and/or the race. As this issue was going to press, the school was preparing to send a facsimile of the banner to President Reagan and had gotten the attention of the *Guinness Book of World Records* people. So far, the Guinness arbiters have offered the school some Catch-22 information—a record has to have been established in order to break it, they say, but so far there's no record for the longest computer-generated banner ever. The school will continue to plead its case, according to Harley Lobo, the teacher who cooked up the project.

THURSTON MIDDLE SCHOOL STUDENTS HOLDING THEIR BANNER

PATENT NO LONGER PENDING

Applied Engineering, one of the major manufacturers of Apple peripherals, was recently awarded a patent for its auxiliary-slot memory boards for the Apple II series of computers.

The patent was granted for the power-saving and multiple-bank-switching circuitry of the company's RamWorks memory boards, which provide an 80-column display and additional memory (up to 16 megabytes with the RamWorks III) for the Apple IIe.

The IIe's 6502 microprocessor addresses up to 64K of memory at a time. Applied Engineering's boards incorporate additional memory through split-second bank-switching, letting the processor switch one 64K bank of memory with another undetectably.

FREE FOR THE TAKING

You can stop the billing clock on the GEnie and CompuServe on-line telecommunication ser-

vices—not with a hackers' trick or illegal account number, but with the companies' blessings. Special-interest groups (SIGs) on both services maintain libraries of public-domain and shareware programs that are there for the taking. These two companies encourage you to contribute to their libraries by turning off the billing clock the moment you begin sending your public-domain or shareware file and switching it back on once you've finished sending your file.

Although The Source, another on-line-service company, does not currently offer such a service (it is considering it), you can get free advice from its Apple expert, Craig Crossman (the same Craig Crossman who contributes to our "Rescue Squad"), who will try to answer your questions overnight.

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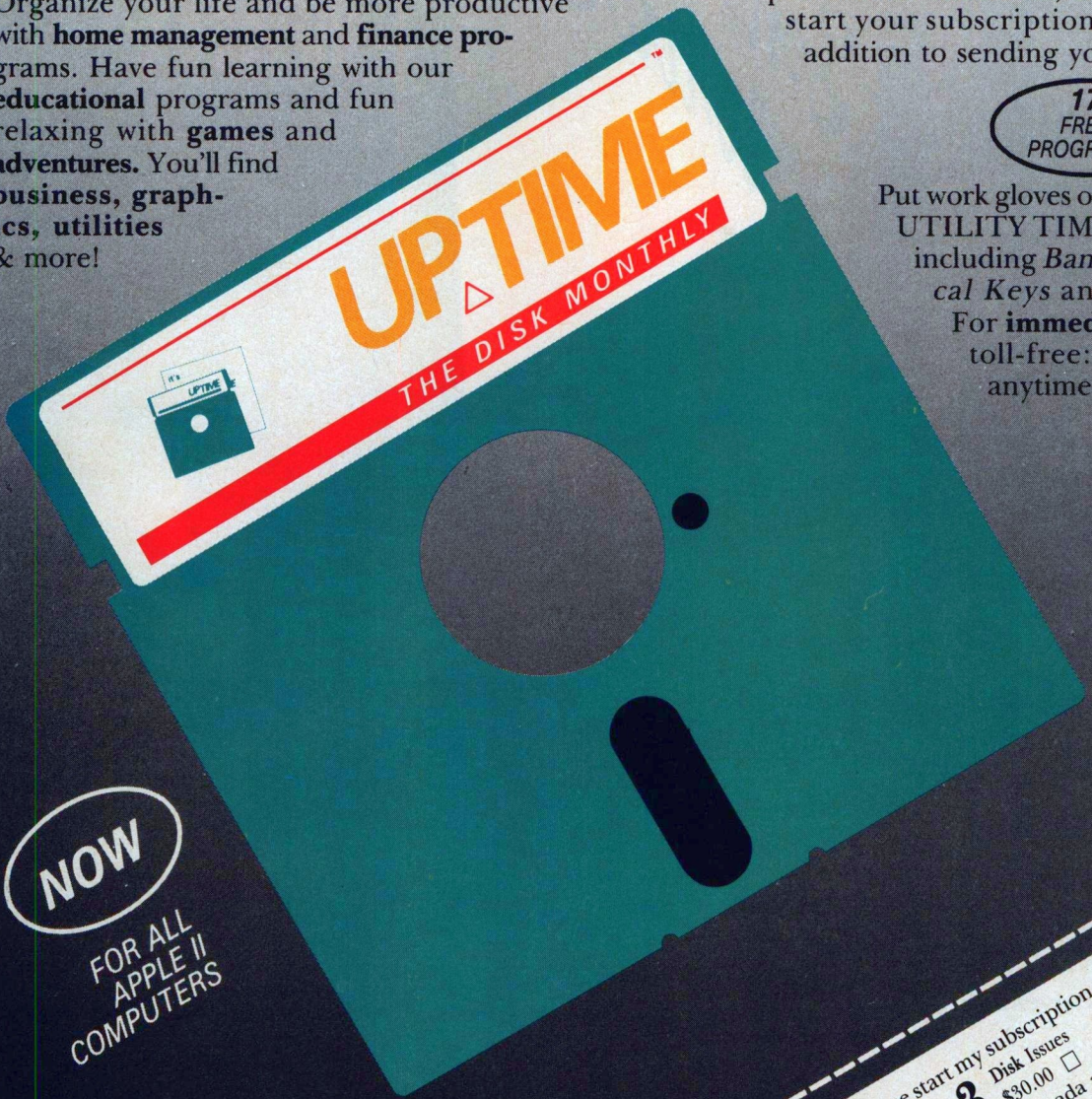

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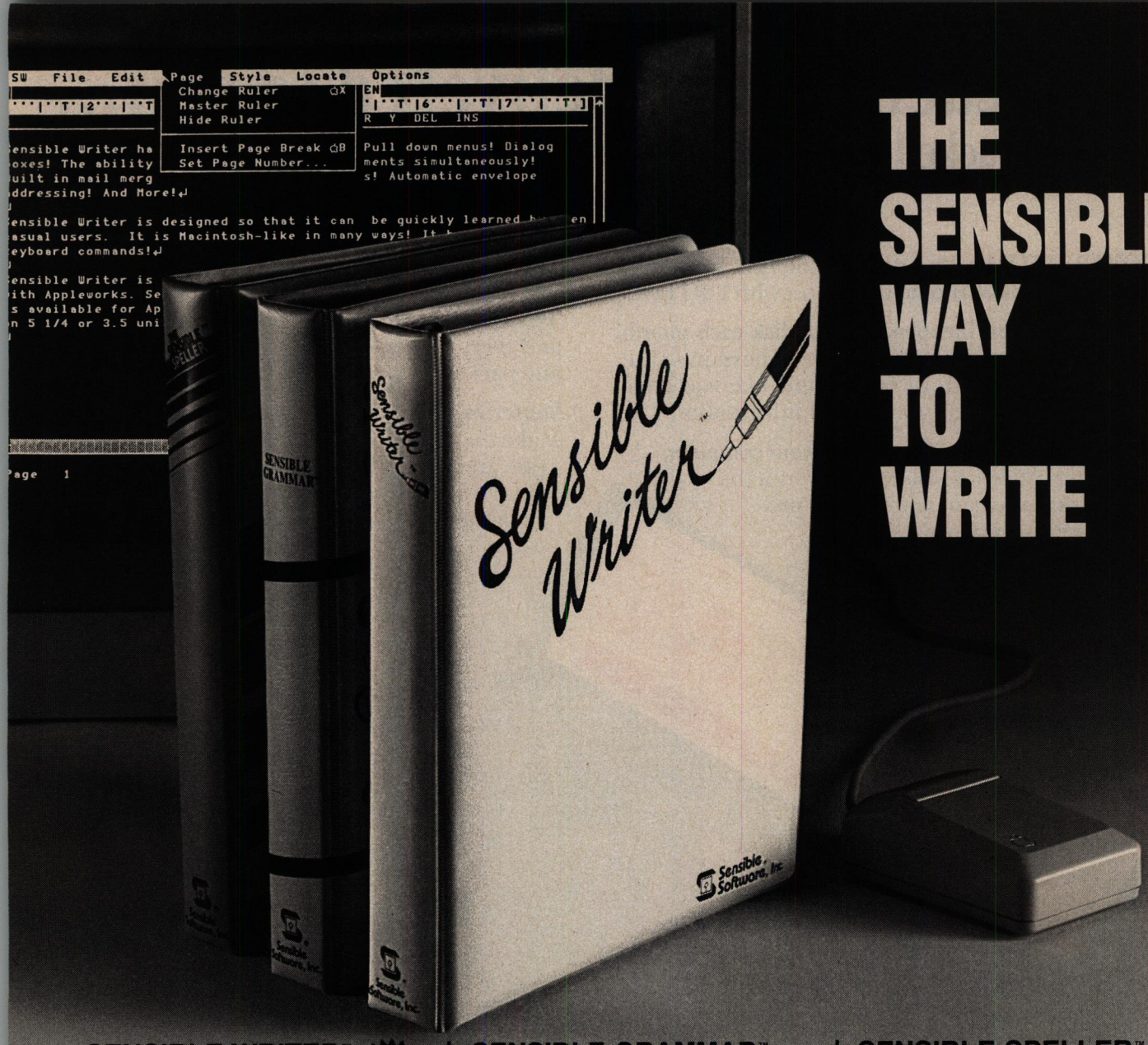

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New

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is designed especially for you, the serious word processor user who demands effective professional documents. It's fast, powerful, and full-featured. Compatible with **Sensible Grammar** and **Sensible Speller**, it is available for Apple IIGS, //c or enhanced 128K //e computers on 5¼ and 3.5 UniDisk for $99.95.

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This comprehensive program saves you embarrassment by checking your papers for grammatical and other writing errors. Featuring a Macintosh-style user interface, it is easy for you to use because it is AppleMouse compatible and also has keyboard commands for speed.

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is easy to use. It shows you misspellings in context, suggests the correct spelling, and allows immediate replacement of misspelled words with correct ones.

Sensible Speller
is compatible with Appleworks and most ProDOS word processors. Supplied on UniDisk 3.5 as well as 5¼" disk, it is available for Apple II computers including IIGS. A non-ProDOS version is also available. Each is $125.

Stedman's Medical Dictionary, Sensible Technical Dictionary™ and **Black's Law Dictionary™** are available separately on diskette for use with the **Sensible Speller.** Each is $39.95. Sensible Speller ProDOS now allows you to merge the dictionaries together.

*Sensible Writer, Sensible Grammar and Sensible Speller ProDOS work with the following programs, AppleWorks (Apple Computer, Inc.); Catalyst (Quark Inc.); Mouse Desk (International Solutions). Sensible Grammar and Sensible Speller ProDOS also work with the following word processors, AppleWriter-ProDOS version (Apple Computer, Inc.); Format II Enhanced-ProDOS (Kensington Microware); MouseWord (International Solutions); Mouse Write-text files (Roger Wagner Publishing); PFS:Write-ProDOS (Software Publishing, Inc.); Sensible Writer (Sensible Software Inc.); Word Juggler (Quark Inc.); Word Perfect (SSI Software); Zardax-ProDOS (Computer Solutions) and others. Sensible Speller ProDOS also works with HomeWord-ProDOS (Sierra On-Line); MultiScribe (StyleWare, Inc.); Word-Talk (Computer Aids) and WritingWizard (Scarborough Systems). Owners of trademarks indicated in parentheses. Black's Law Dictionary (West Publishing, Inc.).

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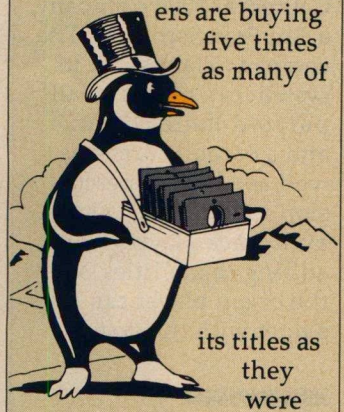
CIRCLE 165 ON READER SERVICE CARD

Increased sales pay for price reductions at some software firms.

POLARWARE PRAISES PRICING

Polarware/Penguin Software, Inc., is turning cartwheels over the results of its repricing strategy. In June, the entertainment and graphics software company slashed prices on all of its programs and now reports that consumers are buying five times as many of its titles as they were before. This increase in sales volume is high enough to make up for the reduced amount that Polarware/Penguin receives for each sale, the company says, calling the response to the repricing "phenomenal."



This isn't the first time this company has dropped its prices. It tried a similar strategy in 1983 but bumped prices back up in 1984 because of heavy competition from cash-rich concerns such as CBS, Reader's Digest, Milton-Bradley, and Mattel, all of which had lots of clout with dealers and money to burn on marketing. "It became an odd situation where we had to advertise more to sell for less," says Mark Pelczarski, Polarware/Penguin's president. So now that the "noise level" has died down, the company feels safe in making this move again.

Polarware/Penguin isn't the only home-software company to slash prices in recent months. Electronic Arts has also repriced a host of its best-known titles and calls them "classics." Programs such as One-on-One, Pinball Construction Set, and Archon now carry a suggested retail price of $14.95, or less than half of their previous prices. EA reports enthusiastic consumer response to its new prices on old products—like Polarware/Penguin, it says sales volume makes up for the lower prices—but takes a more conservative view of the meaning of the increased sales. "It's hard to tell if it's perceived to be a promotion" rather than a permanent price reduction, says EA's marketing vice president, Bing Gordon. If people think it's a promotion, they might be buying up as much as they can, thinking that the prices may go up again. Rather than tout the strategy as an immediate success, Gordon says he'll wait until January—when the new prices will be six months old—to make that call.

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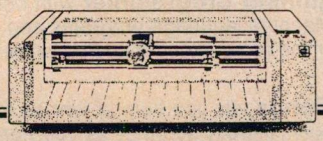

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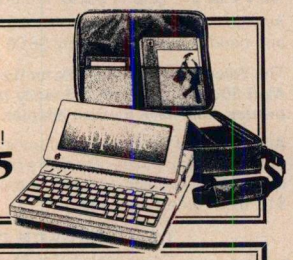

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CIRCLE 103 ON READER SERVICE CARD

NewsPlus

Apple add-ons get their own VP at AST Research, Inc.

AST + APPLE = ACTION

AST Research, Inc., one of the leading suppliers of IBM add-on products, makes it clear that the Apple business market ain't nothing to sneeze at either. The Irvine, California, maker of multifunction cards and hard-disk drives is so satisfied with the sales of its Apple enhancements that it recently gave its Apple-products group its own vice president. Ash Jain, who joined AST in 1984 to help launch the Apple

group, gets the VP title and says that the group is "successful because of the strong demand for the Macintosh Plus in the business environment." AST isn't focusing strictly on the Mac as the Apple system that will carry it into the future, though. The company also has its eye on the Apple IIGS and has just announced several products for Apple's new baby: a one-megabyte memory card, a video digitizer, and a 20-megabyte hard-disk drive.

OPERATIC ASSISTANCE

The melodious tones of a newly installed organ will accompany the San Francisco Opera this season, but we're hardly talking about a traditional pipe organ. It's an Apple IIe equipped with an add-in board, keyboard, and special software from Cathedral 1000 Company, a San Francisco firm. The company claims that its system can mimic an all-purpose church organ and a baroque organ as well as a host of percussion sounds. It also has multitrack playback and editing capabilities, so the organ player can play a duet with the system.

WANTED: ART

Mount Mercy College of Cedar Rapids, Iowa, invites entries for its microcomputer art exhibit, scheduled for January 1987. Entrants must live in Iowa, Minnesota, Wisconsin, Illinois, Missouri, Nebraska, or South Dakota and may submit their work on disks, videotape, photographs, or plain old paper. The deadline is December 22. Submit your entries to Robert Naujoks, Art Department, Mount Mercy College, 1330 Elmhurst Drive NE, Cedar Rapids, Iowa. 52402; (319) 363-8213. +

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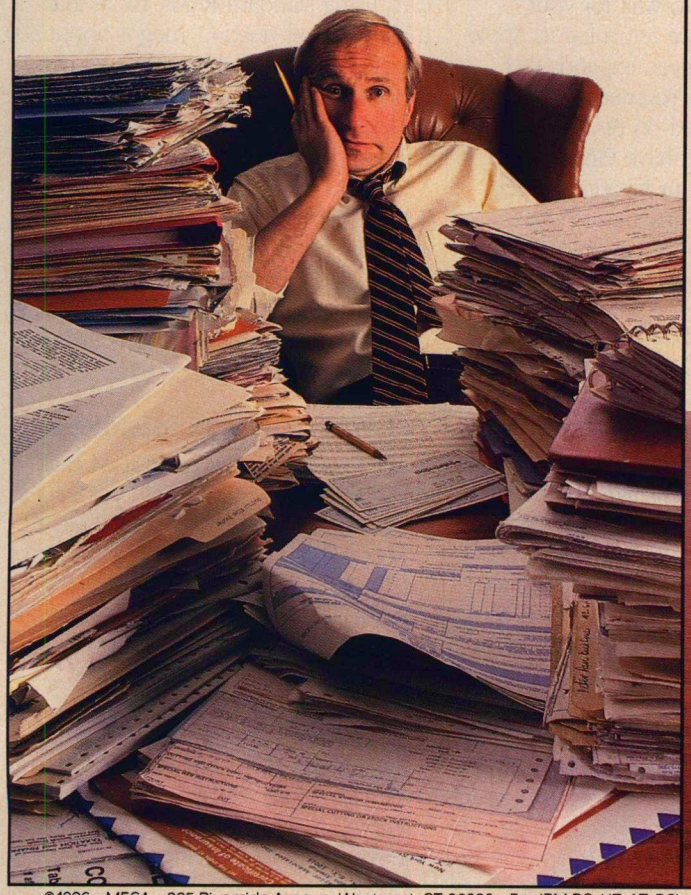

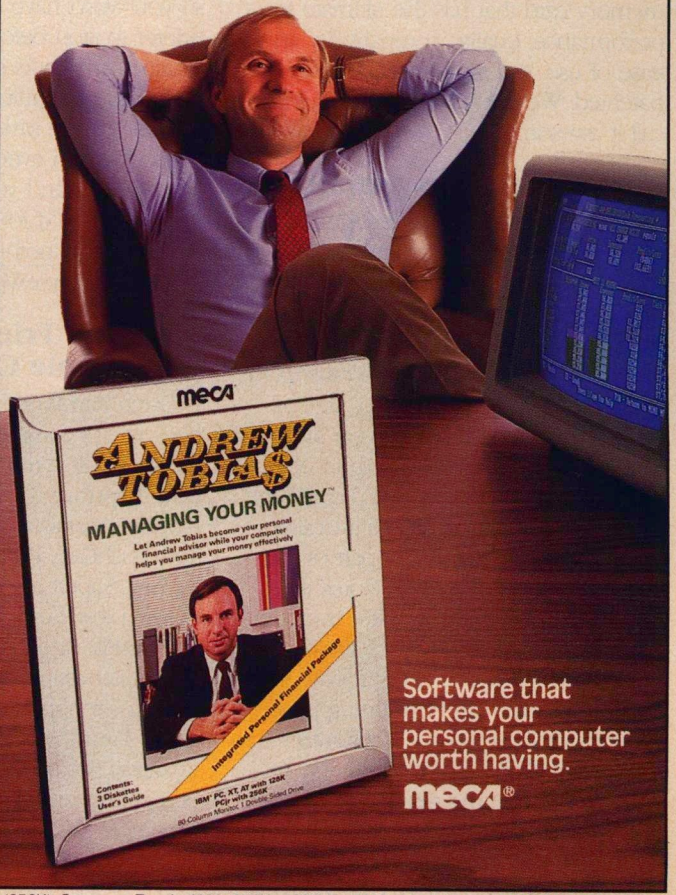

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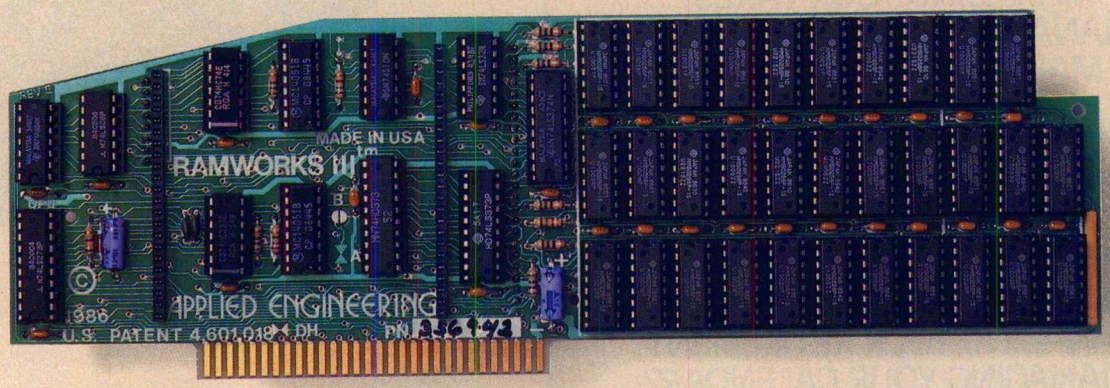


With battery backed RAM port, RGB port, increased memory capacity, full software compatibility and more compact design, RamWorks III is a generation ahead.

RamWorks III is the newest 3rd generation RAM card for the Apple IIe. It incorporates all of the technology and improvements that years of experience and over a hundred thousand sales have given us. By selling more memory cards than anyone else and listening to our customers, we were able to design a memory card that has the ultimate in performance, quality, compatibility and ease of use. A design so advanced it's patented. We call it RamWorks III, you'll call it awesome!

The AppleWorks Amplifier.

While RamWorks III is recognized by all memory intensive programs, NO other expansion card comes close to offering the multitude of enhancements to AppleWorks that RamWorks III does. Naturally, you'd expect RamWorks III to expand the available desktop, after all Applied Engineering was a year ahead of everyone else *including Apple* in offering more than 55K, and we still provide the largest AppleWorks desktops available. But a larger desktop is just part of the story. Look at all the AppleWorks enhancements that even Apple's own card does not provide and *only* RamWorks III does. With a 256K or larger RamWorks III, *all* of AppleWorks (including printer routines) will automatically load itself into RAM dramatically increasing speed by eliminating the time required to access the program disk drive. Switch from word processing to spreadsheet to database at the speed of light with no wear on disk drives.

Only RamWorks eliminates AppleWorks' internal memory limits, increasing the maximum number of records available from 1,350 to over 25,000. *Only* RamWorks increases the number of lines permitted in the word processing mode from 2,250 to over 15,000. And *only* RamWorks offers a built-in printer buffer, so you won't have to wait for your printer to stop before returning to AppleWorks. RamWorks even expands the clipboard. And auto segments large files so they can be saved on two or more disks. You can even have Pinpoint or MacroWorks and your favorite spelling checker in RAM for instant response.

RamWorks, nothing comes close to enhancing AppleWorks so much.

The Most Friendly, Most Compatible Card Available.

Using RamWorks III couldn't be easier because it's compatible with more off-the-shelf software than any other RAM card. Popular programs like AppleWorks, Pinpoint, Catalyst, MouseDesk, Howard-Soft, FlashCalc, Pro-Filer, Managing Your Money, SuperCalc 3a, and MagiCalc to name a few (and *all* hardware add on's like ProFile and Sider hard disks). RamWorks is even compatible with software written for Apple cards. But unlike other cards, RamWorks plugs into the IIe auxiliary slot providing our super sharp 80 column text (U.S. Patent #4601081) in a completely integrated system while leaving expansion slots 1 through 7 available for other peripheral cards.

RamWorks III is compatible with all Apple IIe's, enhanced, unenhanced, American or European versions.

Highest Memory Expansion.

Applied Engineering has always offered the largest memory for the IIe and RamWorks III continues that tradition by expanding to 1 full MEG on the main card using standard RAMs, more than most will ever need (1 meg is about 500 pages of text)...but if you do ever need more than 1 MEG, RamWorks III has the widest selection of expander cards available. Additional 512K, 2 MEG, or 16 MEG cards just snap directly onto RamWorks III by plugging into the industry's only low profile (no slot 1 interference) fully decoded memory expansion connector. You can also choose non-volatile, power independent expanders allowing permanent storage for up to 20 years.

It Even Corrects Mistakes.

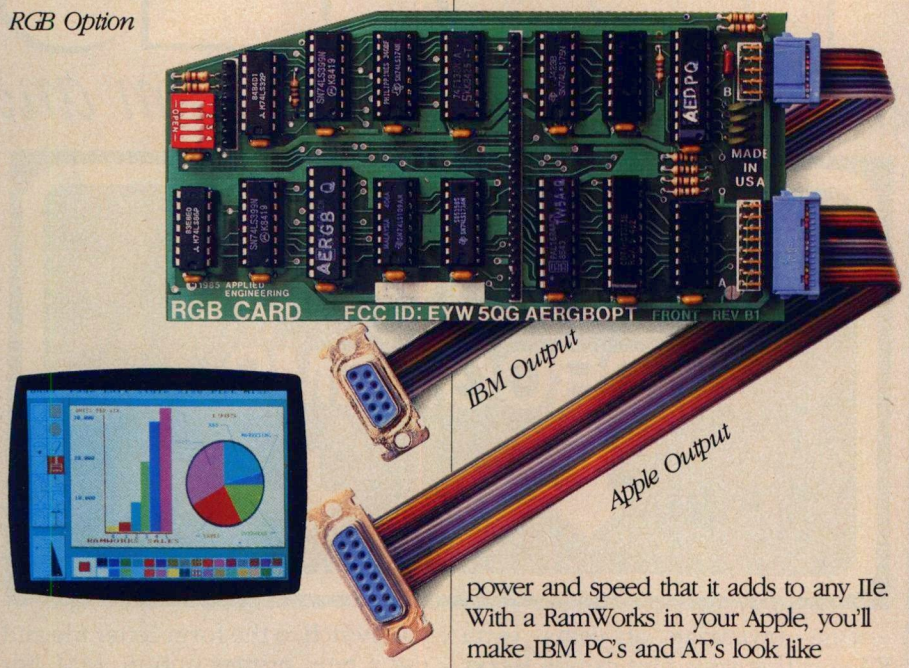
If you've got some other RAM card that's not being recognized by your programs, and you want RamWorks III, you're in luck. Because all you have to do is plug the memory chips from your current card into the expansion sockets on RamWorks to recapture most of your investment!

The Ultimate in RGB Color.

RGB color is an option on RamWorks and with good reason. Some others combine RGB color output with their memory cards, but that's unfair for those who don't need RGB *and* for those that do. Because if you don't need RGB

Applied Engineering doesn't make you buy it, but if you want RGB output you're in for a nice surprise because the RamWorks RGB option offers better color graphics plus a more readable 80 column text (that blows away any composite color monitor). For only $129 it can be added to RamWorks giving you a razor sharp, vivid brilliance that most claim is the best they have ever seen. You'll also appreciate the multiple text colors (others only have green) that come standard. But the RamWorks RGB option is more than just the ultimate in color output because unlike others, it's fully compatible with all the Apple standards for RGB output control, making it more compatible with off-the-shelf software. With its FCC certified design, you can use almost any RGB monitor because only the new RamWorks RGB option provides both Apple standard and IBM standard RGB outputs (cables included). The RGB option plugs into the back of RamWorks with no slot 1 interference and remember you can order the RGB option with your RamWorks or add it on at a later date.

RGB Option



True 65C816 16 Bit Power.

RamWorks III has a built-in 65C816 CPU port for direct connection to our optional 65C816 card. The only one capable of linearly addressing more than 1 meg of memory for power applications like running the Lotus 1-2-3™ compatible program, VIP Professional. Our 65C816 card does not use another slot but replaces the 65C02 yet maintains full 8 bit compatibility.

Endorsed by the Experts.

A+ magazine said "Applied Engineering's RamWorks is a boon to those who must use large files with AppleWorks...I like the product so much that I am buying one for my own system." inCider magazine said "RamWorks is the most powerful auxiliary slot memory card available for your IIe, and I rate it four stars...For my money, Applied Engineering's RamWorks is king of the hill."

"I wanted a memory card for my Apple that was fast, easy to use, and very compatible; so I bought RamWorks."

Steve Wozniak, the creator of Apple Computer

Apple experts everywhere are impressed by RamWorks's expandability, versatility, ease of use, and the sheer power and speed that it adds to any IIe. With a RamWorks in your Apple, you'll make IBM PC's and AT's look like slowpokes.

Quality and Support of the Industry Leader

RamWorks III is from Applied Engineering, the largest, most well supported manufacturer of Apple peripherals and the inventor of large RAM cards for the Apple. With our 5 year no hassle warranty and outstanding technical support, you're assured of the most trouble free product you can buy.

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- Takes only one slot (auxiliary) even when fully expanded
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COVER STORY *BY CHARLES RUBIN*

OTHER ROUTES

Alternatives to Using AppleWorks

Do the integrated packages Foundation and

AppleWorks has become one of the best-selling software programs of all time by integrating the three most significant personal-computer applications (word processing, spreadsheet calculation, and data management) with an appropriate level of power and simplicity. Despite its success, however, AppleWorks isn't all things to all people. Those who crave something a little different in an integrated program can choose from a couple of alternatives. Neither of these programs has the name recognition of AppleWorks, but each promises certain advantages for different types of users.

Before we look at these competitors, though, let's take a quick look at the latest version of AppleWorks. Last September, AppleWorks underwent its first major upgrade in more than two years. With AppleWorks Version 2.0, Apple has acknowledged two major weaknesses of the original program that third-party products were addressing: an inability to use more memory than 128K and the lack of a mail-merge function. The new version requires at least 128K of RAM and can take advantage of up to a megabyte of memory automatically.

One advantage of using extra RAM is that your files can be larger than before. Individual word-processing files can now be up to 511 pages long, and database and spreadsheet files can expand to fill all the memory you have available.

The mail-merge feature is a natural addition to the program. Rather than having to buy a third-party program to merge database data into a form letter, you can now do it right within AppleWorks. To do so, you create a database report containing the data you want to merge and then print the report to the Clipboard. With the report on the Clipboard, you switch to the form-letter file and use a new printer option, MM (for mail merge), in order to display the categories of data stored on the Clipboard. You can then specify locations for the data you're going to merge from the Clipboard by moving the cursor within the form letter and indicating the field names from a list. You can then print the form letters, and the Clipboard data merges automatically.

The other big change to this new version of AppleWorks is the manual. The new manual contains much more information than its predecessor did about moving data between

the spreadsheet and database with the DIF file format, about the limits of using the Clipboard, and about handling specific printing situations. All current AppleWorks users have their own wish list of features that are missing from the program, and this upgrade probably doesn't grant many of those wishes. The spreadsheet module for example, offers no additional financial or trigonometric functions.

On the other hand, AppleWorks is likely to remain the king of Apple II integrated software for some time, which means you have a wealth of books, enhancement products, and local experts to go to for help. If Version 2.0 doesn't allay all of your gripes about AppleWorks, you can still improve the situation with add-on memory cards or accessory programs such as Pinpoint; if you saw the lack of mail-merge ability as the major shortcoming of AppleWorks Versions 1.1, 1.2, or 1.3, then this new incarnation should be right up your alley.

Trio pose a challenge to AppleWorks' dominance?

Now, let's look at two programs that hope to outdo AppleWorks, either by doing much more or by costing far less.

FOUNDATION

Foundation is a software package that integrates word-processing, spreadsheet, and database applications. It comes on three disks (a program disk, a sample files disk, and a disk of file-conversion utilities) and includes three manuals. A 63-page beginners' guide explains the major features of the program; a 171-page, indexed reference guide explains individual commands in each application; and a 12-page booklet explains how to import and export files from AppleWorks, other ProDOS programs, or in standard ASCII or binary formats.

Foundation does not use the ProDOS operating system. Instead, it uses a proprietary operating system called GigaDOS. The main reason for using a proprietary DOS is to improve speed: Foundation calculates spreadsheets noticeably faster than AppleWorks does. One drawback, of course, is that to export files or import them from other Apple programs, you must use Foundation's import/export utilities, and you can't use Apple's disk-copying programs to make backup copies of the software (one backup program disk comes with the package).

The basic philosophy behind Foundation is to offer far more power than AppleWorks does, at the same price. Foundation's makers promote it as a do-all integrated program that can accomplish a variety of office-automation tasks, including accounting and order processing. In fact, it is a fast, powerful program with excellent integration between its applications. You can have up to 14 files open at once in individual windows on the screen (plus an on-line Help window), and you can resize the windows so more than one of them is showing at a time.

All the windows are open on Foundation's desktop, but the program itself occupies a lot of memory, and you have only 45K of memory space to work with. (Powerful file-linking features address this limitation.) Individual word-processing and spreadsheet files are limited to the amount of available memory, but database files can be as large as the available disk space allows. If your spreadsheets or word-processing documents are large, you can link files together for continuous printing or data exchange. These flexible integration options are a major benefit of Foundation.

To move data in bulk from either a spreadsheet, database, or word-processing file into another word-processing file, you can use the Photo command, which is like using AppleWorks' Clipboard. Spreadsheets and databases can share information directly through Link commands, which let you access other spreadsheet or database files and automatically bring data from them into the currently active file. Finally, you can merge database or spreadsheet data into form letters in the word-processing module. Data can come from more than one database or spreadsheet, as long as all the files from which you want to merge data are open on the desktop. As for the individual applications, each offers a good deal more power than does its counterpart in AppleWorks.

Handling Words

In the word-processing module, you can link multiple files together for chain printing or chain viewing (which compensates for the small amount of available desktop space). Word-processing windows can be up to 255 columns wide by 255 lines long. The cursor-movement and deleting features are extensive: You can move or delete by word, line, paragraph, screen, or page.

The Search function accommodates forward and backward search-

ing and replacements, and you can use it to count the number of words in a document or the number of times a certain word occurs in a document. Another unusual feature is the word-processing module's Draw command, which lets you draw lines, boxes, or borders around text. The borders are represented with rows and columns of characters rather than actual lines, though, because of the limitations of the standard Apple monitor and because Foundation doesn't use the extra MouseText graphics routines in the Apple IIc or enhanced IIe ROM.

Some output options include the ability to link several windows for continuous printing and to specify alternating left and right margins in a document for booklike printouts.

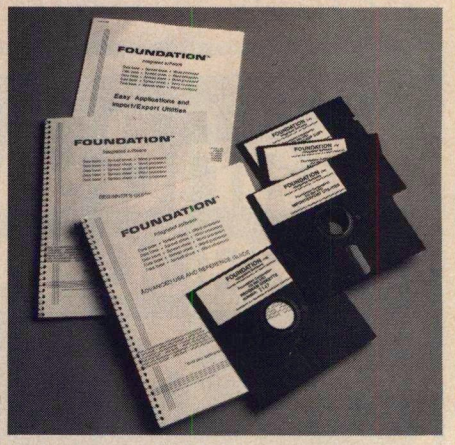
The drawback of the word-processing module is that it trades flexibility for ease of use. The main commands appear on a menu at the bottom of the screen, but this menu gives way to a series of submenus as you work with the program. You can issue commands directly from the keyboard by using the Control key and other keys, but the letters of the commands aren't usually mnemonic. To select a search option, for example, you type Control-A. To set tabs, you type Control-G. The mail-merge process is also complicated, as it involves designating the linked files and fields by number, in the order in which they appear on the desktop. Similarly, the printer-option codes are complex.

Database Possibilities

Unlike AppleWorks, whose database manager has a flat-file structure, Foundation offers a relational database. You can link data between database files, so that entering an account number in one file might automatically cause the program to search a second file, retrieve a customer name and address from it, and then enter that data into the original file below the account number. You can also have data move automatically from a spreadsheet into a database if you set up the proper link. To maximize use of the 45K desktop, database files on the desktop occupy only 2K of RAM—the rest of each file is stored on disk, and the database manager accesses it only when it needs it.

When you define a database file, you can specify different field types such as alphabetical, numerical, integer, date, or formula. You can use logical and arithmetic operators as

The basic philosophy behind Foundation is to offer far more power than AppleWorks does, at the same price.



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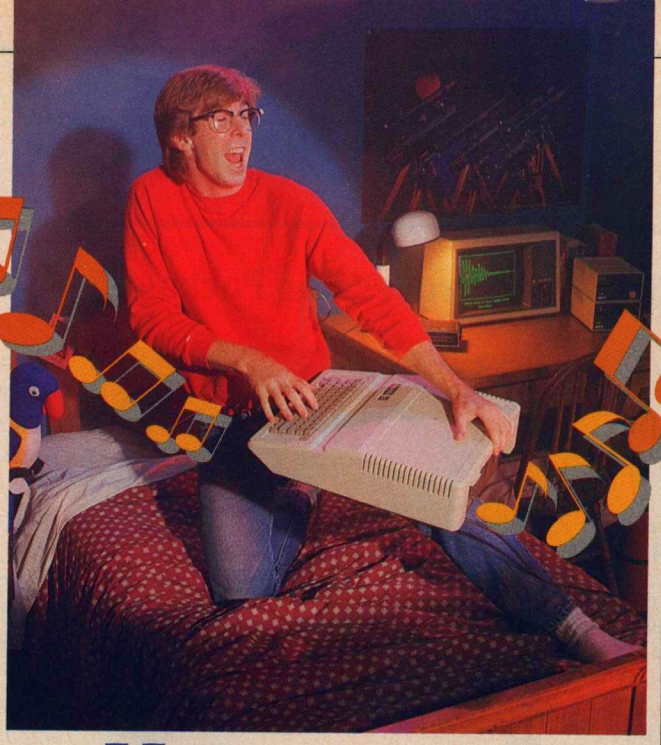

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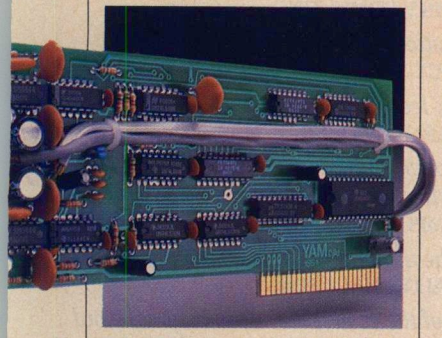

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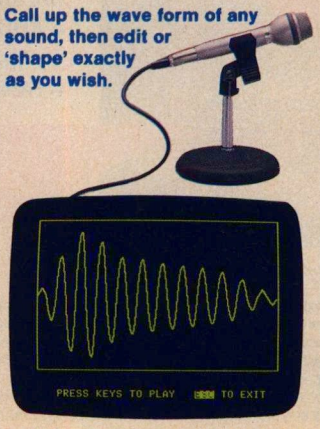

Musical notation is displayed as keys are pressed, allowing the absolute beginner to look, listen and learn.

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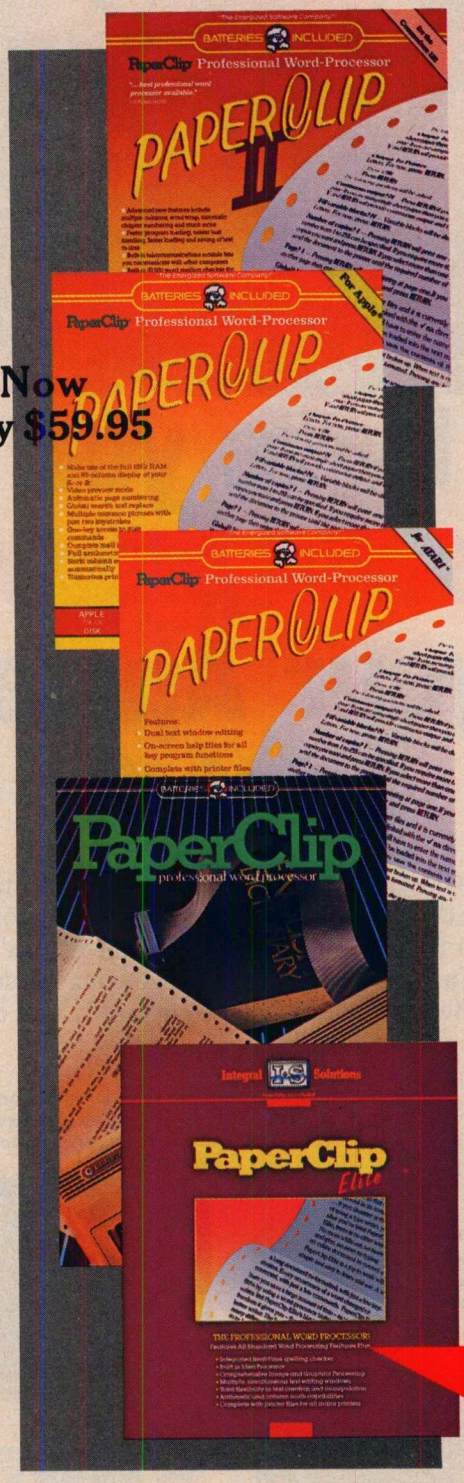

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well as built-in functions to produce calculated results from one or more fields.

Because you can use IF and other logical functions, you can produce extremely complex database reports or sort through records in virtually any way you like. The database manager displays information one record at a time. To display multiple records, though, you can create a report and print it to the screen. The editor with which you create screen forms is fairly complicated—you must use the Control key and various letter keys to move the cursor around and insert or delete lines on database screen forms.

Surveying the Spreadsheet

Each Foundation spreadsheet can contain a maximum of 64 columns by 256 rows, which isn't a lot of space, but you can link multiple spreadsheets together, as long as all the linked spreadsheets are stored on the same data disk. The spreadsheet uses the standard A1-style column/row designations, and the formula structures will be familiar to anybody who has used AppleWorks. In addition to containing letters, numbers, and formulas, cells can also include dates.

One feature for advanced users is macros—you can define and store keystroke macros that enable you to automate complex operations with a spreadsheet, such as getting data from another spreadsheet; making detailed formatting changes; and entering, copying, or moving data in cells in a certain way.

Trade-off

In sum, Foundation packs a great deal of power into a reasonably priced package. Beyond the $250, however, the price you pay for this power is the sacrifice of ease of use. Foundation ignores the open- and solid-apple keys, preferring the Control and Escape keys in combination with letter keys—and the Control-key substitutes aren't easy to remember. To its credit, though, the program does have an on-line help facility.

This program isn't nearly as easy to learn and use as AppleWorks, and the manual could be far more helpful, but if you put in the time, Foundation will stay with you through some highly sophisticated applications.

TRIO

Trio is a low-cost, low-end program for Apple II users who want an integrated word-processing program, spreadsheet program, and database manager and are willing to trade power for price.

Trio comes on a single non-copy-protected disk, all of which loads into your Apple's memory at once. The low price of Trio begins to make sense when you discover that it lacks some features you take for granted with AppleWorks. The 124-page manual doesn't have an index, and, although it explains the program fairly well, it isn't easy to use for reference.

The program's maker says it works with any printer and interface, but that's the case because it outputs standard ASCII characters without any printer-formatting codes. If you want to use boldfacing, underlining, or other enhancement features of your printer, you must look up your printer's control codes in your printer manual and enter them into documents before printing them.

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As for Trio's integration, you can work with only one file at a time, and the facilities for sharing data between applications aren't what you might expect. To use blocks of data from a spreadsheet in a word-processing file, you must print the desired spreadsheet file or portion of a file to disk and then load it into the word-processing file as text. With the database manager, you can print a file to disk and then merge the data into a form letter in the word-processing module, provided you've specified variables in the word-processing document. You can also store variables in the Trio Klipboard and merge them into word-processing documents.

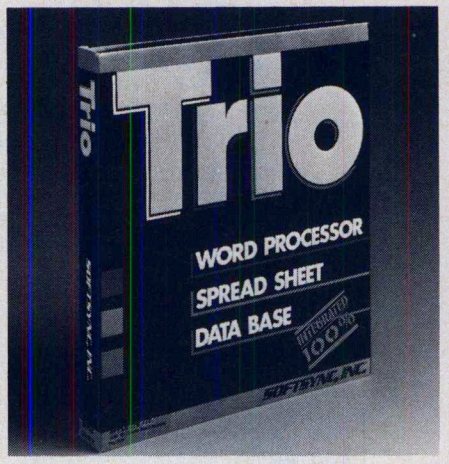
On the other hand, Trio is generally easy to use. It makes good use of the open-apple key in commands, and it is similar to AppleWorks in that most of the commands are the same in each application.

Trio's Strong Suit

Although the individual applications in Trio are unevenly matched in terms of power, the word-processing module is very capable. It offers far better file-handling flexibility than AppleWorks, for example. You can append word-processing files on a disk to another file, you can save a range of lines from a file to a new file on disk, and you can chain files together for printing.

Trio uses a "Klipboard" for temporarily storing blocks of text, but unlike AppleWorks' Clipboard, the Klipboard lets you store up to 36 different blocks of text at once, and you can save the Klipboard file itself so you can reuse boilerplate phrases or data to be merged into a form letter. Another nice feature is an Undo Erase command that lets you recover text you've just deleted.

If your spreadsheeting and database needs are limited, you can save money by buying Trio.



Database Limitations

The Trio database manager is decidedly less functional than its AppleWorks counterpart. This module uses a spreadsheet layout, so that fields are columns and records are individual rows. You can have up to 99 fields (columns) and up to 999 records (rows) in a file, but you must specify the size of the file when you set it up. You can manually extend the original size limits if you run out of room once the file contains data, however.

Because the database uses the spreadsheet matrix for a layout, you can't view records in single-record format. Rather, you must scroll from left to right across the matrix to view fields that are off the screen.

As for data types, the database manager recognizes only letters or numbers. You can't sort by date un-

Infocom introduces four new gam

Infocom,™ the crazy people who brought you "Zork"® and "The Hitchhiker's Guide to the Galaxy,"™ has a habit of coming up with games that add a new dimension to interactive fiction. And the best keeps getting better. Case in point: "Leather Goddesses of Phobos."™ It has a scratch n' sniff card and a 3-d comic book to excite all your senses. Once your interest is piqued, you'll embark on a rowdy romp through the solar system. This hilarious spoof of 1930's pulp science fiction has 3 "naughtiness levels," for the prude to the lewd. "Leather Goddesses" is sure to amuse members of either sex.

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less you use a YY-MM-DD format. One of the most useful database features, record selection, is also missing from Trio. You can't select groups of records based on their contents and logical criteria—you can search only for individual records and sort records on any one field.

Spreadsheet Considerations

Each spreadsheet file can contain up to 99 columns or 999 rows, although, as with the database manager, you must set the size of the spreadsheet when you begin a file. The spreadsheet doesn't follow all the basic conventions for row and column designations and formula formats, which makes it relatively difficult to learn and use. The upper-left cell of the worksheet is designated R1C1 instead of A1, which means twice the typing when you use cell coordinates in formulas.

The spreadsheet formulas themselves are also particularly clumsy. When you copy a formula in AppleWorks, a prompt asks you if you want the copy to be absolute or relative. In Trio, you must specify a relative formula through the format of cell coordinates—a relative formula adding cells A1 (R1C1) through cells A5 (R5C1) is rc[-5]:[-1].

Even if you can get used to this bizarre formula formatting, you'll find that the spreadsheet module has fewer built-in functions than AppleWorks' module does. Some of the missing functions are ones you're likely to use every day, such as SUM and AVG. In all, the spreadsheet module offers less power and less ease of use than does the corresponding module in AppleWorks.

Less for Less

On the whole, Trio offers less power for less money. The word-processing module works much like the one in AppleWorks, and it offers better file-handling features, but the spreadsheet and database modules are decidedly inferior. Still, if your spreadsheeting and database needs are very limited, you can save yourself a lot of money by buying Trio rather than AppleWorks. ✚

Charles Rubin is the author of Command Performance: AppleWorks, *and* AppleWorks, *both from Microsoft Press. He writes about many technologies, but he is happiest writing about Apples.*

PRODUCT INFORMATION

AppleWorks 2.0
Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, CA 95014
(408) 996-1010
List Price: $250
Requires: Apple IIe with Extended 80-Column Card, or IIc; 128K RAM; one disk drive

Foundation
Foundation Corporation
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Chicago, IL 60614
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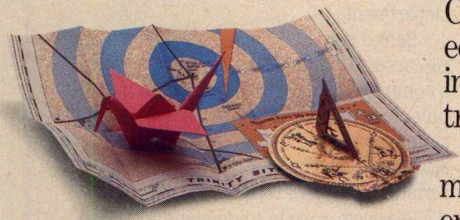

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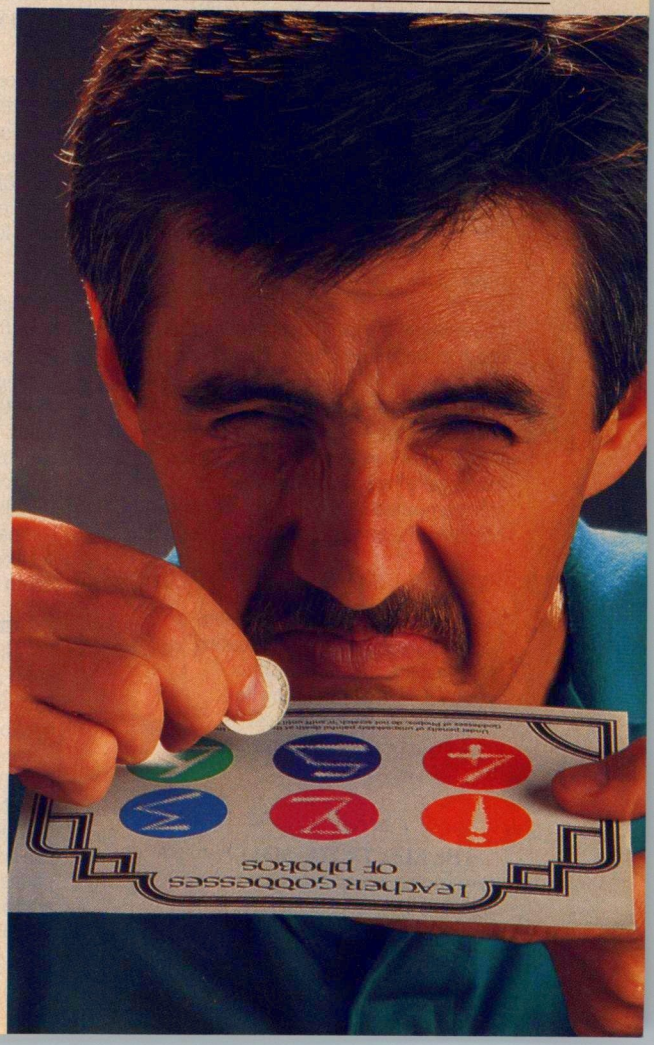

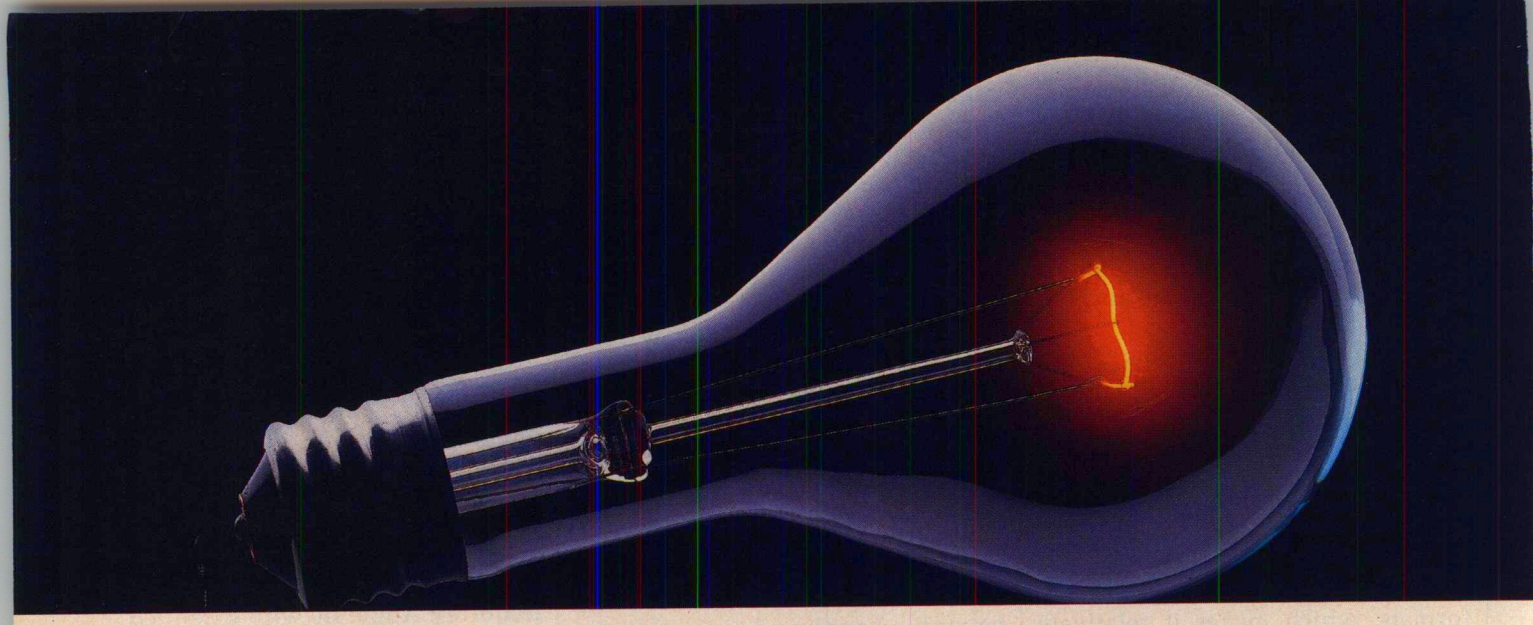

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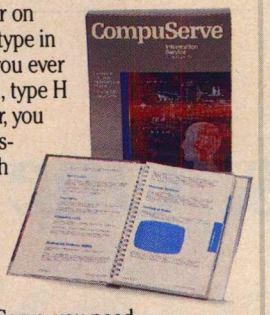

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SOFTWARE *BY CHARLES RUBIN*

OTHER ROUTES TO FOCUSED INTEGRATION OPTIONS

Depth over breadth in four integrated packages

Three-in-one programs such as AppleWorks, Foundation, and Trio (see "AppleWorks Alternatives" in this issue) compete for your software dollars by offering the three most popular applications—word processing, database management, and spreadsheet calculating—in one package. These programs are broadly useful, but they make some compromises in either power or ease of use. As your computing needs become clear, you may well find that your activities center on one or two applications, rather than three, and that in those applications, you'd rather not accept the compromises inherent in three-in-one programs.

Fortunately, many Apple software developers have come up with integrated packages that emphasize one or two applications. They realize that most people who are looking for a more focused integrated package are either number people or word people. The number people want a powerful spreadsheet program that integrates with a closely related function such as graphing, and the word people want the best in word processing with a closely related program such as a spelling checker. Database management, the third major application, is often bundled with either word-related or number-related programs because it's useful for both.

Although you must give up one of the three major applications when you opt for a focused integrated package, you gain a lot in terms of power. Our sampling considers two examples each of word-related and number-related packages.

TWO INTEGRATED SPREADSHEET PROGRAMS

In the case of spreadsheet programs, those opting for a focused package will end up with number-crunching tools equal to anything available on any personal computer. Both of the programs here offer considerably more power than the spreadsheet programs in three-in-one packages, and they are specifically designed to be easy for number people to use.

SuperCalc3a is the Apple version of SuperCalc3, the archrival of Lotus 1-2-3 in the IBM world. The Apple product uses the same file format and offers just about all the same capabilities as the IBM version, which means you can do just about any type of number crunching you like.

The package includes three disks: The /PROGRAM disk contains the spreadsheet program and database manager, and the /GRAPH disk contains the graphing functions. The /TOOLS disk contains data-conversion utilities for AppleWorks, VisiCalc, or DIF files; the Sideways program for printing spreadsheets sideways on paper; and a file-transfer utility for sending SuperCalc files to an IBM PC or compatible computer for use on SuperCalc there. None of the three disks is copy-protected.

SuperCalc3a goes out of its way to aid every user, both with superb documentation and with a long list of compatible peripherals. The documentation includes a 26-page quick-start guide that walks you through the creation of a simple spreadsheet; a 425-page ring-bound manual that contains a reference section organized by program commands, as well as a longer tutorial

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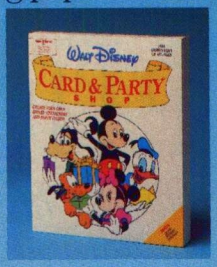

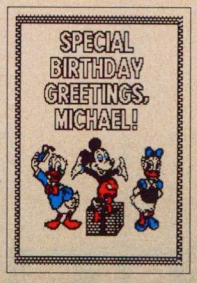

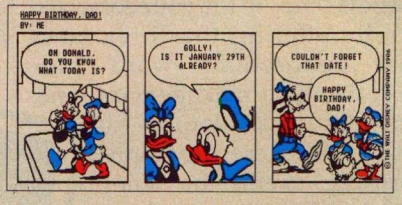

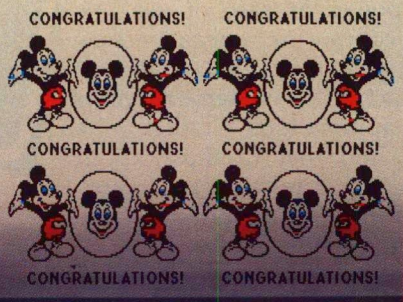

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and appendices; and two quick-reference cards (one for working with the spreadsheet and one for graphing). The program works with virtually every printer, plotter, and expanded memory card (up to 500K), as well as the most popular video-display cards.

The heart of SuperCalc3a is the spreadsheet program, which is fast, versatile, and fairly easy to use, given its power. SuperCalc programs have always used a set of slash (/) commands, and this version is no exception. The open-apple key is used only for scrolling rapidly or moving the cursor into a cell's entry line for editing. Typing any of the 21 slash commands (such as /L [Load] or /F [Format]) reveals one or more submenus, from which you can select more specific options. If you get lost, you can always press a couple of keys to display a context-sensitive, on-line help function.

The SuperCalc3a spreadsheet matrix is a maximum of 63 columns by 254 rows, which harks back to the days of VisiCalc, but you can consolidate values between spreadsheets to gain more space. With an expanded memory card, spreadsheets can be up to 500K, which is enough to completely fill all of the worksheet's 16,000 cells. If you have a file that's larger than your disk space, SuperCalc3a will segment the file and store it on multiple disks. If you don't have extra memory, the program's scheme for managing sparse memory makes the most of what you have by storing only filled cells in RAM. When your spreadsheets get big, you can view two vertical or horizontal windows of the same worksheet at once.

SuperCalc3a contains more than 50 built-in functions, including internal rate of return, net present value, and payment, for financial use; trigonometric functions such as sine, cosine, and tangent; calendar and date functions; and logical functions. You can name ranges of cells to make referencing them in formulas easier, sort data on one or two columns, and create command files (or macros) that let you store complex sets of commands and then execute them automatically by pressing a couple of keys.

The graphing features of SuperCalc3a are available from the /GRAPH disk, which must be in a disk drive when you issue graphing commands within the spreadsheet program. You can create many different types of graphs: pie and exploded-pie charts, bar and stacked-bar charts, area graphs, line graphs, x-y graphs, and high/low graphs. You can view graphs on the screen—in up to 15 colors, if you have a color monitor—and you can print them in as many as 99 colors on a plotter. Graph titles can print out in any of eight different typefaces. You can store up to nine different graphs with each spreadsheet file. The graph-description files are easy to create by following prompts on the screen.

The heart of SuperCalc3a is the spreadsheet program, which is fast, versatile, and fairly easy to use.

The database manager uses the spreadsheets' matrix format, so that rows represent records and columns represent fields. You can use all of the spreadsheet program's commands and functions in a database file, so you can create calculated fields using formulas, sort data on one or two rows or columns, sum fields, widen columns to up to 127 characters, and otherwise manipulate data. The difference in a database file is that you must define separate areas for entering data, extracting data, and defining criteria for data selection. You must specifically identify these areas in a worksheet by entering cell coordinates so that the data-handling side of SuperCalc3a knows how to treat entries in each area. The procedure for setting these areas up is rather clumsy, compared with using the database manager in AppleWorks or other filing programs, but the database program is suitable for manipulating information in lists.

On the whole, SuperCalc3a is an excellent spreadsheet program with flexible, easy-to-use graphics that calculates faster than AppleWorks (which is no slouch itself) and offers many more functions. The manual is very clear, and the company supplies free technical advice for the first six months of ownership.

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VIP Professional

As SuperCalc3a is a knockoff of an IBM PC program, SuperCalc3, VIP Professional is a clone of Lotus 1-2-3. With a few minor differences, this program is identical to 1-2-3, and the manual even suggests several Lotus books and magazines you can consult to learn how to use VIP Professional. All the commands in VIP Professional are identical to those in Lotus 1-2-3, and the levels of power in its spreadsheet, graphics, and database modules are likewise the same. The program runs on both the Apple IIe and IIc, and a slightly more expensive version is available for the new Apple IIGS.

Although you can use Lotus-like slash commands with this program, VIP Professional also has a Macintosh-like interface that uses pull-down menus for command selection. If you use slash commands, you can type letters or use the arrow keys to select commands from pull-down menus or dialog boxes. The program also works with a mouse, however, so you can use it to display menus and select commands, as well as operate scroll bars at the sides of the screen. Several icons at the bottom of the screen let you use the mouse to recalculate, to specify absolute cell references, and to access the on-line help function.

VIP Professional is a large program—it requires 256K of RAM on the IIe and IIc and 320K on the IIGS. This RAM is necessary for the program itself, so on the Apple IIe or IIc, you must use a memory-expansion card that employs a bank-switching technique to expand the amount of memory a program can use. Cards from Applied Engineering, Checkmate Technologies, AST Research, and Legend Industries will work, but Apple's own Memory Expansion Card will not, since it acts only as a RAMdisk drive, rather than as an extension of memory directly available to the computer's processor for program storage.

The VIP Professional package contains two double-sided 5¼-inch disks, neither of which is copy-protected. One is the program disk—you load the bulk of the program from the first side of the disk and then leave the disk in a drive to load program overlays from the second side as needed. The second disk contains sample files on one side and two utilities for enhancing graphs and converting AppleWorks files on the other side. The documentation consists of a 10-page introductory handbook, a quick-reference card, and a 260-page manual.

VIP Professional's spreadsheet program combines the ease of use of other mouse-controlled Apple spreadsheet programs with the enormous power of Lotus 1-2-3. Its maximum worksheet size is a whopping 8192 rows by 256 columns. You can use the mouse to select cell references for formulas or to indicate groups of cells to be copied or named as a range. Anyone who has used a mouse knows that this device provides a way to specify cells in a spreadsheet that is far simpler and more efficient than traditional methods. Also, easy-to-use Mac-like dialog boxes have replaced many of the nested menus of the Lotus interface (in which one slash command produces a second list of options at the top of the screen).

As you might expect, VIP Professional's spreadsheet program uses a complete collection of functions. Its financial functions are internal rate of return, future value, present value, net present value, and payment. Logical functions include true, false, and if. Trigonometric functions include sine, cosine, tangent, PI, and log. And, there are the usual arithmetic functions including absolute value, maximum, minimum, round, average, sum, and a random number generator. You can also create keyboard macros, as you can with SuperCalc3a. You can't create permanent data links between spreadsheets with VIP Professional, but you can import data selectively from one file into the file you're working with.

The built-in graphing feature in VIP Professional is rather limited—you can display graphs on the screen but not print them directly from the program. You can create pie, bar, and stacked-bar charts and line and x-y graphs for display on the screen in color or black and white. You can create and save multiple graphs from a worksheet, and if you update a worksheet, the program updates its associated graphs. To print a graph on a printer or plotter, though, you must use the GraphPrint utility that comes on the second VIP Professional disk, meaning that you must quit the spreadsheet program itself and then load a predefined graph file to

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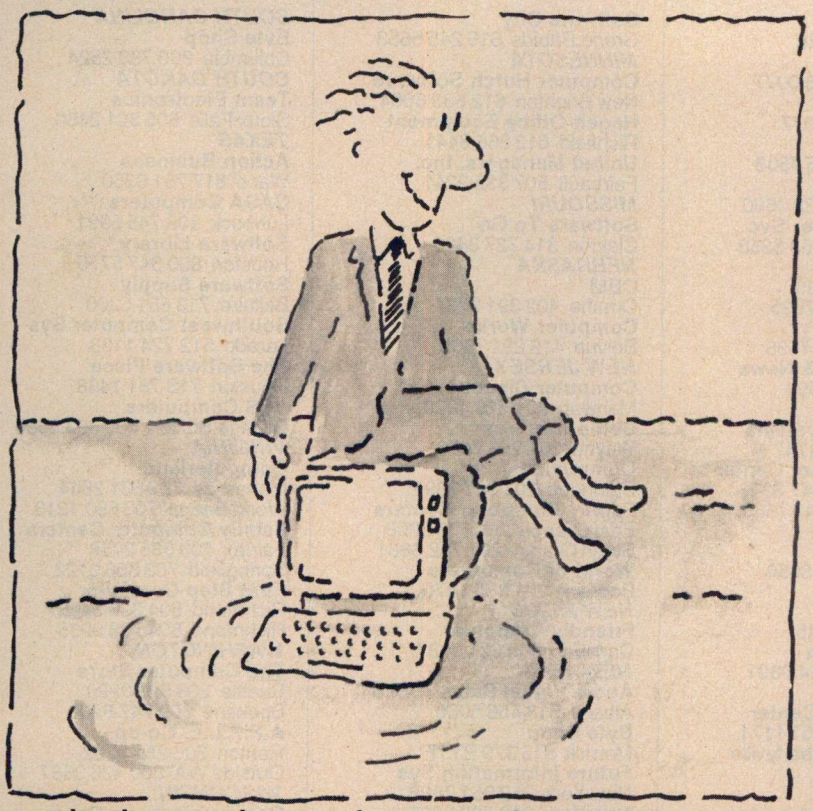

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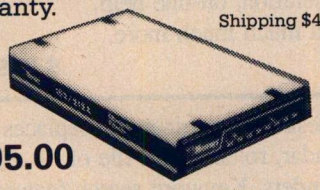

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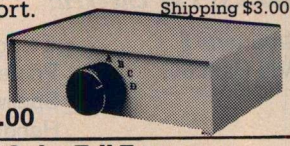

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print once you've booted the GraphPrint program. This method is clumsier than that of SuperCalc3a, which lets you print a graph directly from the spreadsheet program itself. Once you boot GraphPrint, however, you can choose among four different typefaces for titles; specify different printers, plotters, or interfaces; and control the graph's size and position on the paper.

The database manager in VIP Professional uses the spreadsheet's matrix format, storing records in rows and fields in columns. You can use the spreadsheet's formulas to calculate database data, and the same spreadsheet formatting commands control the appearance of your file. As with SuperCalc3a, you must create input, output, and criteria areas of the worksheet so the database knows how to treat what you enter. Once you've entered your data, you can specify selection criteria in the criteria range and have the program display certain records that match the criteria in the output range. Again, this method of manipulating data is far clumsier than what you have with most filing programs.

In summary, VIP Professional is a remarkably powerful spreadsheet program that is easier to use than many less-powerful programs. Its smooth integration of slash commands and mouse-driven menus and icons is extremely effective. VIP Professional's graphing program isn't as easy to use or as powerful as the one in SuperCalc3a, however, and the database program is only for list management. VIP Technologies supplies six months' free customer support.

TWO INTEGRATED WORD-PROCESSING/DATABASE PROGRAMS

The two word-oriented packages we'll look at below are more than just word-processing programs. With their powerful database features, these programs can help you create complete automated systems for billing, customer tracking, inventory management, form-letter generation, and more.

Nine to Five

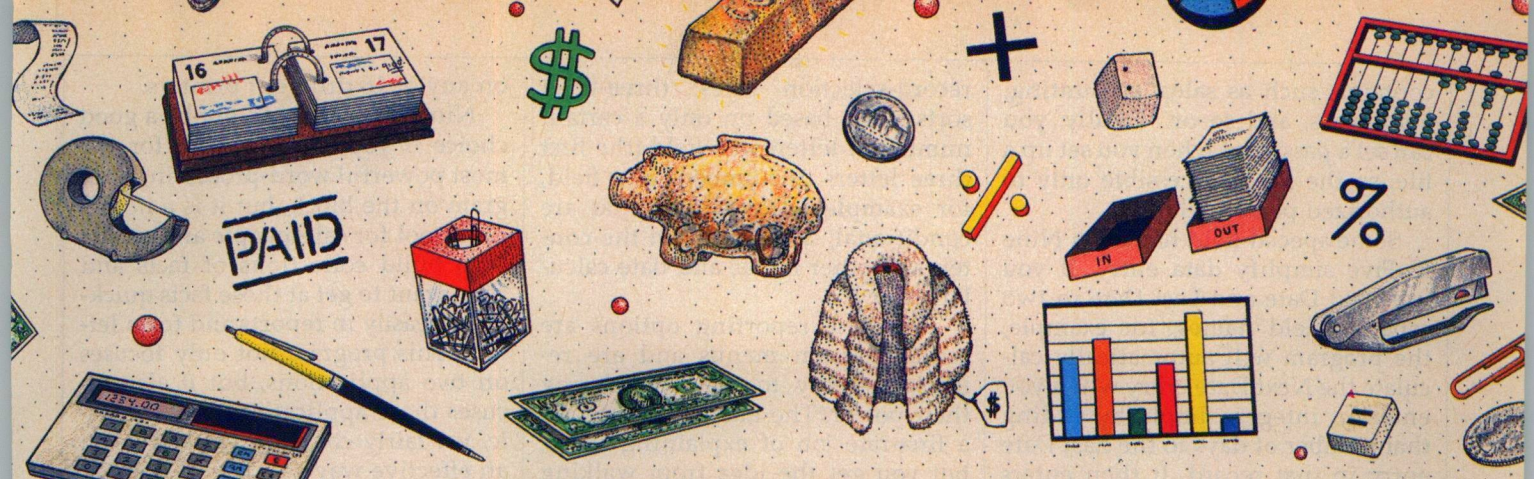
This program takes a unique approach to meeting the needs of the average business user. Developed by a salesman for sales-related activities, Nine to Five is essentially a powerful database program with integrated word-processing capabilities. It comes in 128K and 512K versions—the difference is in the amount of program information maintained in memory and the amount of special information that you have to copy to data diskettes. In the 512K version, you can initialize data diskettes and use them immediately; in the 128K version, you must take the extra step of turning over the program disk in order to initialize data disks.

Nine to Five is based on the premise that you begin with a collection of information and then create text files (letters or reports) to use that information collection productively. You could, if you wanted, use Nine to Five solely for writing simple letters, but that would be rather like using SuperCalc3a or VIP Professional just for their database features.

Nine to Five is essentially a powerful database program with integrated word-processing capabilities.

The package includes three disks: a double-sided program disk, a sample database disk, and a sample application-files disk. You can store only one database file on a disk because of Nine to Five's file format; application files such as database reports, form letters, and normal letters must be stored on specially initialized application disks. The non-copy-protected program comes with a 92-page manual that is more a tutorial than a reference work and does not have an index.

The database manager is the central feature of Nine to Five. Files can contain up to 50 fields and can occupy an entire disk. When you create a file, you must specify the length of each field, along with its name and data type. You can set fields to contain dates, integers, decimal numbers, general data (text and/or numbers), and yes/no information. You also specify a type for each database file and use this designation later to indicate which report formats and form letters can use the file's data. The types aren't rigid—you can define your own types according to the kind of information the data file



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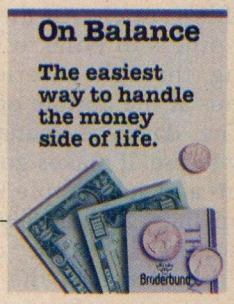

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contains, such as sales, accounting, employees, and so on. Finally, you can set a password when you set up a file, so the file is accessible only to authorized personnel.

Some special field names in Nine to Five simplify data entry. If you use Next Date and Last Date in two separate field names, for example, the program will automatically calculate the Next Date entry when you enter an integer, simply by adding that number of days to the Last Date entry in that record. It then enters the calculated Next Date automatically in the Next Date field.

Once you define a database, you can change its name, type, field names, or password; if you want to add or delete fields, however, you must transfer the information into a new database file that contains the new fields.

Once you've set up a file and entered some records, you can sort data on up to three fields, extract data with a powerful set of record-selection criteria similar to those in AppleWorks, and find or match records according to strings of data you enter. If you can't remember all the data you want to match or find, you can use "wild cards" to broaden the file's search. All these functions, like others in Nine to Five, involve going through a series of nested menus at the bottom of the screen.

The database manager is very easy to use. It makes good use of the open- and solid-apple keys, and the commands are largely mnemonic, indicating the type of operation you'll perform by the letter of the key you press. Some special commands make data entry easy, including a Restore command that undoes a new entry and restores the previous one, a Same command that duplicates the entry from a previous record, and a Next command that adds 1 to the previous integer entry and puts the new number into the current field.

You can report data from a database or insert it into form letters by creating text files on a special Applications disk. Reports can be either in a columnar format or in custom formats you design by laying them out on an editing screen. Among the powerful reporting features are the ability to combine data from two fields into one field in a report; calculated fields based on arithmetic formulas; data selection based on record-selection rules; three-level sorts; sorts based on only a certain number of letters in a field (the first three letters or numbers in a field, for example); calculations that are conditional, depending on the contents of other fields; and date calculations.

All these reporting options are available from menus and are remarkably easy to use, considering their power. The manual doesn't do a first-rate job of explaining them, but you get the idea from walking through a series of tutorials. The reporting commands are available in any text file, so you can design a form letter that conditionally includes certain paragraphs, based on the contents of a database field, or that contains calculated figures, such as in an invoice.

Although you can create ordinary letters with Nine to Five's text editor, it's really designed to work with the database program. To create a form letter, you simply include the names of the database fields from which you want to import data and then make sure your database disk is on-line when you print. Text files can be only up to 100 lines long, but you can chain-print multiple files if you have longer documents. Like the database manager, the word-processing program features a Restore (undo) command, and it includes other unusual commands such as Attach, which fills the blank space to the right of the cursor by bringing up the contents of the next line, and Divide, which splits the current line at the cursor and places the text to the right in the next line below.

Nevertheless, the word-processing program is straightforward and easy to use, if not as powerful as some others. You can move the cursor by character, line, or screen or to the beginning or end of the file, and you can delete text in the same increments. You set tabs by pressing the solid-apple and Tab keys, and you find text strings by pressing either apple key and F (although you can search forward only from the cursor position).

As for output, the text editor can control a variety of printer options, including Pica and Elite fonts; condensed or expanded print; single and double spacing; letter or draft print quality; and justified, centered, or left-justified text. Nine to Five letters and database reports can print on any of 16 different printers.

Nine to Five would not be a good choice if you were looking for the most powerful word-processing program on the block, but it is a nearly ideal tool for salespeople and others who build collections of facts and then want to get at those facts quickly and easily in reports and form letters. This program not only focuses on two applications, but it also focuses those applications on a specific, yet fairly common work style in an effective way.

Simply Perfect

Simply Perfect is an integrated word-processing program, spelling checker, and database program that loads into your Apple's memory all at once. It is really two programs, Letter Perfect (the word-processing/spelling-checker module) and Data Perfect (the database manager), that use a common set of commands and are accessible from the same main menu. Along with an unprotected program disk, you get a dictionary disk that must be in a disk drive when you spell-check a document. The ring-bound manual has separate sections for Letter Perfect and Data Perfect, each with its own index, and there are also a master index for the entire manual and a quick-reference card.

Simply Perfect is still a powerful combination for people who work with words.

The Letter Perfect word-processing program does most of the things you would expect from a stand-alone product. You can move the cursor or delete text by character, word, line, paragraph, screen, or from the cursor to the beginning or end of the file. Files can be only as long as available memory (about 30 pages), but you can link files together for continuous printing. Also, you can append files on disk to the file currently in memory.

As for formatting, there is good news and bad news. You can create lines as wide as 256 characters, and you can center, justify, left-justify, and right-justify text. The program also gives you boldface, underlined,

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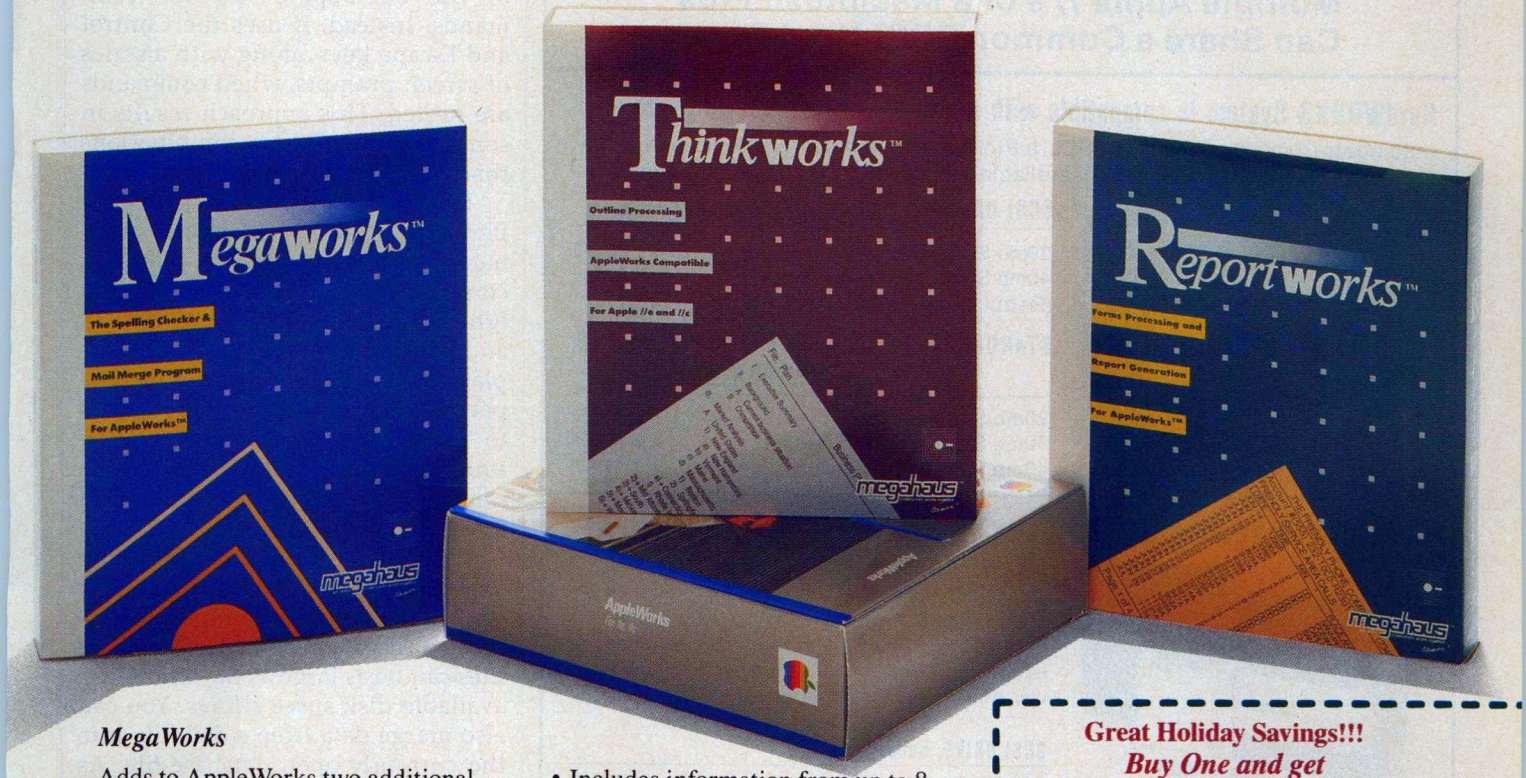

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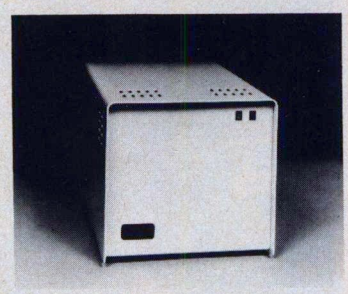

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superscript, and subscript text, and you can specify the distance between headers and footers and the main text on a page. Once you enter text on the screen and begin editing it, though, the display doesn't automatically reformat itself to accommodate changes you make. Instead, you must rejustify the file before you can see how your changes will affect the document's appearance.

Also, Letter Perfect makes no use of the open-apple key for commands. Instead, it uses the Control and Escape keys, along with a series of screen prompts, when commands are nested. This approach results in some Command-key combinations that aren't very easy to remember.

The spelling checker in Letter Perfect counts the words in a document and displays suspect words in context on the screen. You can then ignore the suspect word or edit it, and you can ask the program to display alternate spellings of the suspect word. You can't add new words to the dictionary, however, so the program continues to suspect the same proper names or technical terms every time.

The database manager in Letter Perfect is quite flexible, although it isn't as easy to use as it might be. Unlike word-processing files, database files can be as large as the amount of available disk space allows. You can also merge data from a disk file into the currently open database file. As with Nine to Five, the disk-based database files are sorted and searched more slowly than if the entire database were contained in memory, since the computer must wait for disk access with large files.

A database can have a maximum of 32 fields per file, and each record can contain up to 511 characters. You can define field types as text, numbers, dates, or formulas (for calculated fields). When you enter data into a numeric field, Data Perfect provides a built-in calculator that takes a formula you enter and produces a value from it in that field.

The manual demonstrates the reporting abilities and file structure of the database manager with several examples, including a teacher's grade report (in which student scores are averaged and ranked); an accounts-receivable file (in which current purchases are added to a running balance); an address file; a customer contact file; and a person-

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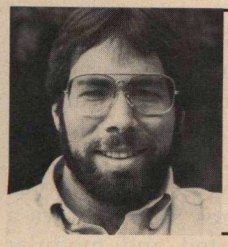

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nel file. You can create a variety of office-management systems with this program.

The mail-merge feature in the database module lets you extract data and insert it into form letters. To do so, you create a database report and print it to a file on disk. Then, you merge that file with a form-letter document in the word-processing program. You mark data for insertion by typing the number of the field in the database file from which you want the data to come.

Simply Perfect has been around for a few years, which probably accounts for its not being easier to use than it is, but it is still a powerful combination for people who work with words. You get two highly functional programs on one disk with a unified set of commands, and you don't need a souped-up Apple to run them.

INTEGRATING STAND-ALONE PRODUCTS

If you don't want an integrated program right now but you want to have the possibility of integration in the future, you can buy one of the programs from a family of modular products, such as the PFS: File, Report, and Write series or the Personal Choice series. These families contain separate programs for each application, each of which comes in an individual package with its own manual. Because the modules are from the same company and are designed to work together, you can import and export data files between them. You can integrate a report from PFS:File into a document you've created with PFS:Write, for example.

In the end, many people opt for integrated programs because they combine two or more applications' power under a unified set of commands and greatly simplify the sharing of data between applications. The chart on pages 52–53 shows a variety of integrated and modular packages for different needs. Please consult the chart for product information on the software this article has covered. ✚

Charles Rubin is the author of Microsoft Works, Command Performance: AppleWorks, AppleWorks, *and* The Endless Apple, *all from Microsoft Press. He writes about many technologies, but he is happiest writing about Apples.*

Power Play.

In personal computer performance, power makes the difference. When you increase your computer power, you improve your performance. It's that simple.

WordPerfect 1.1 for the Apple IIe/IIc and the new Apple IIGS* works on that perfectly simple premise. And works beautifully. WordPerfect 1.1 is the word processor designed to get the most out of your Apple IIe/IIc or IIGS. The most power. The most efficiency. The most functions. And the most for your money.

Power to the Core.

WordPerfect 1.1 will give your Apple the power to process your words, thoughts and ideas like never before. With scores of useful and unique functions, WordPerfect will do almost any word processing task you can imagine.

For instance, with WordPerfect 1.1 you can do footnotes, with automatic numbering and placement at the bottom of the page. And you can create macros, do a mail merge, set headers and footers, and check your spelling with WordPerfect's 50,000-word dictionary (115,000 words on Apple IIGS).

Plus text entry and display on WordPerfect 1.1 is twice as fast as on the previous version. And WordPerfect now supports true proportional printing for both HMI and microspacing printers.

WordPerfect 1.1 features include:

- 50,000-word spelling dictionary (115,000 on Apple IIGS)
- Align on any character
- Automatic formatting on screen
- Automatic page numbering
- Block features (bold, delete, move, save, underline, etc.)
- Bold and underline text
- Center text
- Chaining of macros
- Comprehensive file management
- Date set/format/insertion
- Extensive printer/font definition
- Flush right
- Footnotes
- Headers and footers
- Hyphenation, automatic prompting
- Indent left and left/right
- Macros
- Mail merge
- Overstrike
- Right justification
- Search and replace
- Super/subscripts
- Text file create/edit/invoke
- Widow/orphan protection
- Word look-up and count
- And more.

Easy as Pie.

For all its capabilities and functions, WordPerfect 1.1 is remarkably easy to learn and use. By utilizing designated function keys and a template, WordPerfect doesn't require you to memorize strings of keystrokes. Features like bold, underline and center are easy to locate and just a couple of simple keystrokes away.

In addition, WordPerfect's newly revised step-by-step manual contains thorough learning examples for beginners and a complete reference section for experienced users. And on-line help screens are provided for easy assistance with individual functions.

An install program is also included to let you take advantage of expanded memory and other ProDOS-compatible hardware.

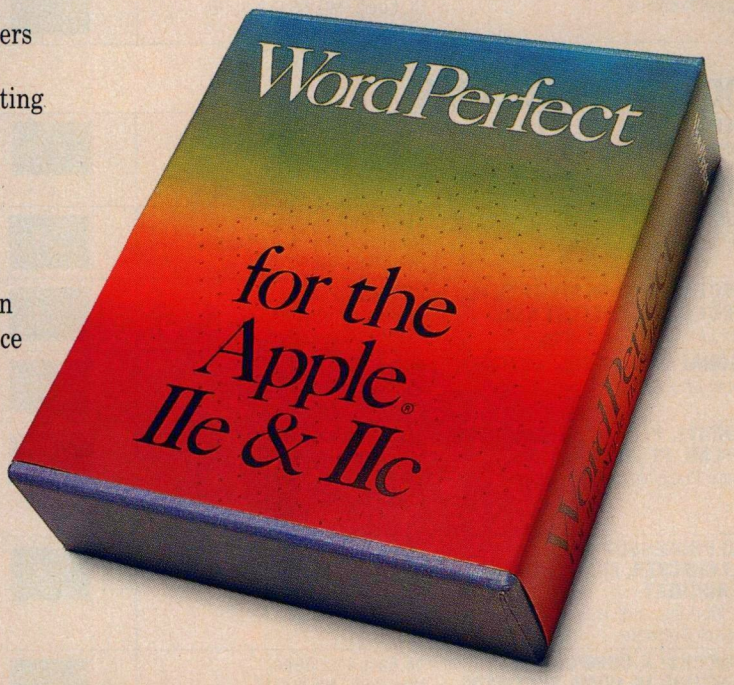
Harvest the Power.

Give your Apple a power boost today. Get WordPerfect 1.1 for the Apple IIe/IIc and IIGS. It's the perfect way to squeeze the most out of your Apple.

For more information, call or write WordPerfect Corporation, 288 West Center St., Orem, Utah 84057 (801) 227-4000.

*Runs under ProDOS-16.

WordPerfect CORPORATION



CIRCLE 118 ON READER SERVICE CARD

OTHER ROUTES

APPLEWORKS ALTER

INTEGRATED PROGRAMS

		COMPONENTS			
		WORD PROCESSING	SPREADSHEET	DATABASE	GRAPHICS
THE EXECUTIVE SECRETARY Sof/Sys, Inc.	4137 Zenith Avenue South Minneapolis, MN 55410 (612) 929-7104	■		■	
FOUNDATION Foundation Corporation	506 West Armitage Avenue Chicago, IL 60614 (312) 880-5761	■	■	■	
MAGIC WINDOW IIEXTRA Artsci, Inc.	5547 Satsuma Avenue North Hollywood, CA 91601 (818) 985-2922	■			
NINE TO FIVE Nine to Five Software	P.O. Box 915 Greenwood, IN 46142 (317) 887-2154	■		■	
PERSON-TO-PERSON 2.1 Trutec Software	1700 Solano Avenue Berkeley, CA 94707 (415) 525-4901	■		■	
SIMPLY PERFECT LJK Enterprises, Inc.	7852 Big Bend St. Louis, MO 63119 (314) 962-1855	■		■	
SUPERCALC3a Computer Associates Microcomputer Division	2195 Fortune Drive San Jose, CA 95131 (408) 942-1727		■	■	■
TRIO Softsync, Inc.	162 Madison Avenue New York, NY 10016 (212) 685-2080	■	■	■	
VIP PROFESSIONAL ISD Marketing, Inc.	Unit 3, 2651 John Street Markham, Ontario L3R 2W5 Canada (416) 479-1880		■	■	■
WORD JUGGLER Quark, Inc.	2525 West Evans, Suite 220 Denver, CO 80219 (303) 934-2211	■			■
WRITE AWAY Peregrine Software	1160 Appleseed Lane St. Louis, MO 63132-3206 (314) 997-2369	■			

MODULAR PROGRAMS

HOMEPAK Batteries Included	30 Mural Street Richmond Hill, Ontario L4B 1B5 Canada (416) 881-9816	■		■	
MAGIC OFFICE Artsci, Inc.	5547 Satsuma Avenue North Hollywood, CA 91601 (818) 985-2922	■	■		■
PERFECT WRITER, PERFECT FILER, PERFECT CALC, PERFECT LINK THORN EMI Computer Software	285 Mill Road Chelmsford, MA 01824 (617) 256-3900	■	■	■	
PERSONAL CHOICE COLLECTION Personal Choice Software	Drawer 7287 Mountain View, CA 94039 (415) 940-6044	■	■	■	■
PFS:WRITE, PFS:FILE, PFS:ACCESS, PFS:PLAN, PFS:GRAPH Software Publishing Corporation	1901 Landings Drive Mountain View, CA 94039-7210 (415) 962-8910	■	■	■	■
WORD PROCESSOR WITH SPELLCHECKER, FILE & REPORT, SPREADSHEET Better Working, a division of Spinnaker Software	One Kendall Square Cambridge, MA 02139 (617) 494-1200	■	■	■	
THE WORKS! A COMPLETE COLLECTION OF HOME SOFTWARE First Star Software	18 East 41st Street New York, NY 10017 (212) 532-4666	■			■

This table contains a sampling of products, and the information herein is based on manufacturers' claims. For further information on most items in this table, please circle the corresponding Reader Service Number on the reader-service card in this issue.

BY CAROL PERSON AND MARJORIE BRANDON

NATIVES

TELECOM-MUNICATIONS	COPY-PROTECTED	PRICE	SYSTEM REQUIREMENTS	NOTES	READER SERVICE NUMBER
■		$159.95	II+, IIe, or IIc; 64K RAM; DOS 3.3	Business-oriented word processor with database manager, ideal for producing customized form letters	
		$250	IIe with Extended 80-Column Card, IIc or IIGS; 128K RAM; Proprietary OS	Fully integrated word processor/relational database/relational spreadsheet	570
■		$199.95	IIe with Extended 80-Column Card, or IIc; 128K RAM; DOS 3.3	Magic Window IIe upgraded with desk accessories, calculator, note pad, Rolodex-type card filer, calendar, and telecommunications. Owners of Magic Window IIe can upgrade for $40	571
		$99.95	IIe or IIc; 128K RAM; 2 5¼-inch disk drives or 1 3.5-inch disk drive	Fully integrated database-management/word-processing/report-generation package	573
■		$65, copy-protected; $100, non-copy-protected	II+, IIe, IIc, or IIGS; 128K RAM; ProDOS	Macintosh-like graphic integrated telecommunications program with Rolodex dialer, modem software, and word processor that can produce form letters from the Rolodex file	574
■		$169.95	IIe with Extended 80-Column Card, 128K RAM, DOS 3.3	Integrated word-processing program, spelling checker, and database program	
		$195	IIc or enhanced IIe, 128K RAM, ProDOS	Spreadsheet program with graphics and data-management capabilities	575
		$79.95	IIe with Extended 80-Column Card or IIc; 128K RAM; ProDOS	Easy-to-use spreadsheet/word-processing/database package	576
		$249.95, IIe, IIc; $299.95, IIGS	IIc or enhanced IIe with 256K RAM and bank-switching memory-expansion card; or IIGS with 512K RAM; 2 disk drives rec.; ProDOS	Lotus 1-2-3 work-alike spreadsheet program that reads and writes 1-2-3 files on the IBM PC	
■		$99	IIe, IIc, or IIGS; 64K RAM; ProDOS	General-purpose word-processing program that includes telecommunications	577
■		$59.95	II+, IIe, or IIc; 64K RAM; DOS 3.3	Word-processing program that has sort utility, user-definable function keys, mail merge, conditional text, and auto-answer/auto-dial	578
■		$19.95	IIe or IIc, 48K RAM, DOS 3.3	Package including strong telecommunications, good word processing	
		$250	II+ or IIe with 80-column card, or IIc; 64K RAM; 2 disk drives	Applications combined through icons of file drawers, folders, and office stationery. Includes spelling checker	579
■		Writer, Filer, and Calc, $139; Link, $109	IIe or IIc; 64K RAM; 1 5¼-inch disk drive, 2 rec (not IIe enhanced)	Modular word processing, database, spreadsheet, and telecommunications programs	580
		$49.95 each; collection, $119.95	II+, IIe, or IIc; 64K RAM; DOS 3.3	Complete set of modular productivity tools for home, school, and small-business use—has money-back guarantee	581
■		$125 each except Access, $70; PFS Work Mates (Write, File/Report, Plan), $250.	IIe or IIc, 128K RAM	Modular, easy-to-learn software	
		$59.95 each	IIe or IIc, 128K RAM rec., DOS 3.3	Simple-to-use modular programs for home and school. Word processor includes 50,000-word spelling checker	
		$49.95	II+, IIe, or IIc; 64K RAM; 2 disk drives rec.	A collection of 13 programs for the home. From within the word-processing program, you can use 8 of the 13 modules	582

THE BEAGLE COMPILER

NEW! COMING DEC. 1

$74.95 (for any Apple II–64K min.) | by Alan Bird

Machine-Language Speed for Applesoft Programs

Boot THE BEAGLE COMPILER and then run practically any Applesoft BASIC program from disk. The program will be converted on the spot, in seconds, to run at machine language speed.

HOW FAST IS IT?

It depends on your original Applesoft program. 5- to 7-times speed is about average. 10-times speed–and up–is not uncommon.

HOW EASY IS IT TO USE?

Say you've got a normal (slow) Applesoft program on disk named "ABC". Simply type RUN ABC and, within seconds, ABC is running at machine language speed!

It's just that easy.

If you want, make changes to your program (using Applesoft) and immediately re-run it at machine language speed.

"Beginning programmers love it. Experts are amazed."

IT'S QUICK!

Compiling takes only a few seconds (more or less–it depends on a program's size).

EFFECTIVE

Most programs compile without alteration. Syntax errors, illegal GOTO's, and so on, are automatically trapped before a program runs.

COMPACT AND CONVENIENT

A compiled program actually occupies less memory than its Applesoft original. You can even save in compiled format so people can't read or change your original Applesoft code.

PRODOS BASED

Compile Applesoft programs from ProDOS floppy disks, hard disks or Unidisk 3.5's.

Like all Beagle Bros software since 1980, The Beagle Compiler is not copy-protected.

BEAGLE SCREENS

NEW!

$34.95 (for any Apple IIe, IIc or IIGS)
by Fred & Sara Crone, Matt Reimer, Bert Kersey and Rob Renstrom

BEAGLE SCREENS will get your message across–anything from "Happy Birthday" to "Hands Off"– in a unique and colorful way. Use our pictures to add a touch of class to your Apple programs or presentations.

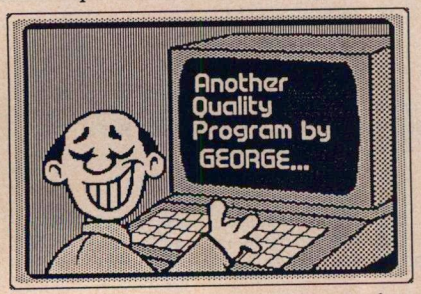
Or just use them to show off your Apple.

You get forty captionable full-screen pictures on disk (samples shown here). Half of the pictures are automatically animated as soon as you put them on the screen.

Each picture has a blank area (or "balloon") where you can add your own message.

We make it EASY to add your own words and create colorful on-screen "slide shows".

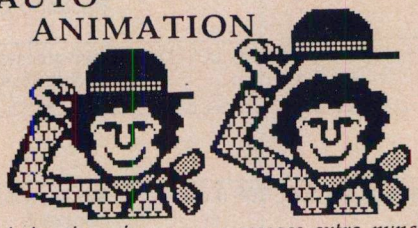
Or print the pictures up as unique signs. (Printing requires a dot matrix printer and any standard printer software like Triple-Dump.)



It's easy–just type the message on the screen, and save the picture on disk.

Choose from a dozen caption typestyles to give your messages variety. Beagle Screens is compatible with Font Mechanic fonts too.

AUTO-ANIMATION



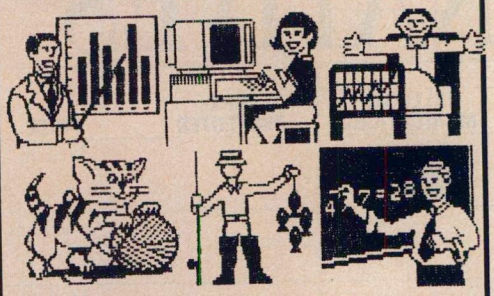
Animation gives your messages extra punch. Twenty Beagle Screen pictures are automatically animated as soon as you load them onto the screen.

MINIPIX DISK #2

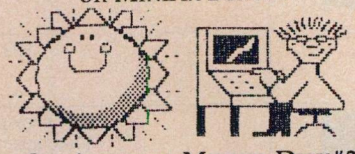
NEW!

$29.95 / by Fred & Sara Crone

MINIPIX DISK#2 is 200 pictures–ALL NEW and ready to use with THE PRINT SHOP™:



Plus–You'll find 200 more pictures on MINIPIX DISK#1:



Coming soon: MINIPIX DISK#3 and Minipix for THE NEWSROOM.™

TRIPLE-DUMP

$39.95 (for any version of Apple II)
by Mark Simonsen & Rob Renstrom

TRIPLE-DUMP combines with your dot-matrix (graphics-capable) printer and any Apple II to print:

- Hi-res graphics
- Lo-res graphics
- 40-column text
- Double Hi-res graphics
- Double Lo-res graphics
- 80-column text

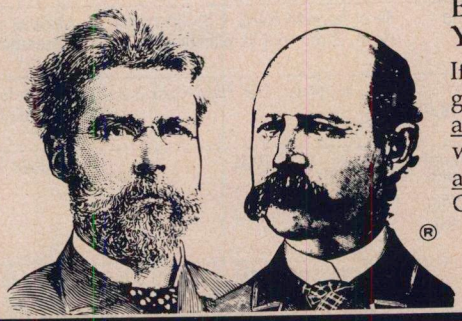
Make "hard copies" of all kinds of images with absolutely no programming knowledge.

Or, if you're a programmer, use Triple-Dump's routines in your Applesoft programs.

Triple-Dump offers picture cropping, rotating and magnifying, plus the ability (on many printers) to adjust the print density.

BANNERS!

Print giant (8"-high letters) text banners on any printer. Great for special occasions!



BUY BEAGLE PRODUCTS AT YOUR SOFTWARE STORE.

If your dealer is out of a particular disk, get on his case. Tell him he can have any of our products in his store for you within a couple of days by contacting any major Apple software distributor. Or by phoning Beagle at **619-296-6400**.

Or you can order by mail (we ship fast!):
Call Toll Free (orders only–Mon.-Fri., 9am-4pm Pacific time):
1-800-345-1750 (Calif. 1-**800-992-4022**).
Visa, MasterCard or COD(or mail a U.S. check).
Add $2.50 shipping ($5.00 if overseas)
+$3 if COD +6% if California.

Beagle Bros MICRO SOFTWARE

BEAGLE BROS, INC.
3990 OLD TOWN AVENUE
SAN DIEGO, CA 92110

MACROWORKS

$34.95 (for AppleWorks version 1.3 or older)
by Randy Brandt

Note: New AppleWorks Version 2.0 requires New SUPER MACROWORKS→

MACROWORKS streamlines AppleWorks' word processor with new features. For example, one keystroke now deletes the character or word at the cursor. Another keystroke jumps to the start or end of a line. Another erases an entire line.

Change your mind? Press ⌘-U to "undo" your last delete-command.

New! AppleWorks MOUSE CONTROL

MacroWorks lets you use your Apple's Mouse to control AppleWorks' menus, scrolling, word-block highlighting , and so on.

APPLEWORKS MACROS

MacroWorks will convert any series of keystrokes into a new one-keystroke solid-Apple (⌘) command. (All open-Apple commands stay intact.)

Use MacroWorks' built-in macros or define your own. For example, make ⌘-N type your name and address. Or let ⌘-X save or print all of your desktop files, nonstop.

You can set up macros that execute any often-repeated function. You can even skip over unwanted AppleWorks questions like "How many copies?".

"...THE BEST SINGLE APPLEWORKS ADD-ON AVAILABLE TODAY."
—A+ Magazine Oct. 86

"...IF YOU USE APPLEWORKS, BUY MACROWORKS."
—Editor's Choice inCider, Aug. 86

JUST BOOT APPLEWORKS, AND GO!

MacroWorks is not a time-consuming "pre-boot" disk. To start up, just boot AppleWorks like you always do. Now you've got optional Mouse control and you've got over 4,000 keystrokes-worth of macros at your fingertips.

SUPER MACROWORKS NEW!

$49.95 (requires new AppleWorks version 2.0)
by Randy Brandt

SUPER MACROWORKS provides the same AppleWorks enhancements and improvements as MacroWorks, PLUS:

AUTO STARTUP

Boot AppleWorks and it will get itself up and running without another keypress. It will also automatically load any file that you want.

DIRECTORY DATABASE

Read file names from any or all of your disks into the AppleWorks Data Base.

Now you can sort by file name, type, date, etc., and make printouts, to see what's *really* in that disk library of yours.

NO MORE TYPING PATHNAMES!

When AppleWorks wants a pathname (another disk or direc-tory), you now select from a menu instead of typing. Simply highlight the name you want–it's just like loading files.

TIME/DATE MACRO

One keystroke prints the current date or time anywhere in AppleWorks–in any application.

READ-THE-SCREEN MACROS

Convert from lower case to upper and back! Cut and paste anywhere, including from field-to-field or record-to-record in the Data Base.

LOCAL/GLOBAL MACROS

Define macros that work in one specific application (for example, in the Spreadsheet, but not in the Data Base).

Updates: Mail old MacroWorks manual front cover+$22.50 to Beagle Bros (add 6% if California).

POWER PRINT

$39.95 (for any Apple II–64K min.)
by Rob Renstrom

Works with most full-font downloadable printers, including: Apple DMP and IMAGEWRITER (I & II), EPSON (FX, JX, EX), OKIDATA (92, 93, 192, 193), PANASONIC (1092, 1093), STAR (DELTA, RADIX, SD, SG, SR), and more

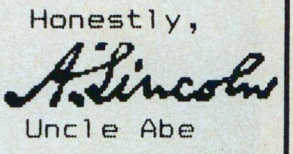
POWER PRINT lets you "download" a second typestyle into your printer's memory, so you can alternate between your standard printer-font and a custom font with special characters and symbols:

(Custom fonts appear on your printer, not on the screen. Any key can be made to print any character.)

OUR FONTS OR YOURS

Many custom printer-fonts are included on the Power Print disk. An easy-to-use Font Editor lets you redraw any of the characters in our fonts. Or you can design your own custom fonts and special characters from scratch.

You can even design a set of custom characters that combine to print a small illustration like a signature.



For a creative touch, print your logo at the top of all of your word processing documents.

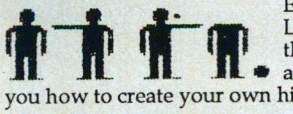
FAST–and Compatible with APPLEWORKS

Unlike other printer-font software, Power Print won't slow your printer down one bit. And it's compatible with AppleWorks, and most other Apple software.

SHAPE MECHANIC

$39.95 (for any version of Apple II)
by Bert Kersey & Mark Simonsen

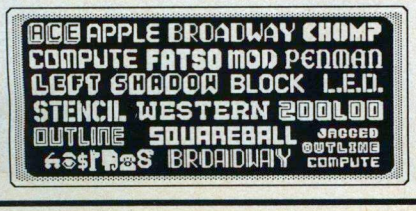
SHAPE MECHANIC converts hi-res drawings into animatable shapes that can be put on the screen with simple Applesoft commands. It also converts sections of hi-res pictures into "drawable" shapes.



Easy "List and Learn demos on the Shape Mechanic disk teach you how to create your own hi-res programs.

HI-RES TYPEFACES TOO

30 proportionally spaced hi-res screen display fonts–both large and small–are included on the Shape Mechanic disk. Each character may be edited or redrawn as you choose.



FONT MECHANIC

$29.95 (for any version of Apple II)
by Mark & Jon Simonsen

FONT MECHANIC gives you thirty new hi-res display typefaces compatible with all of the programs on Shape Mechanic, Apple Mechanic and Beagle Screens.

G.P.L.E.

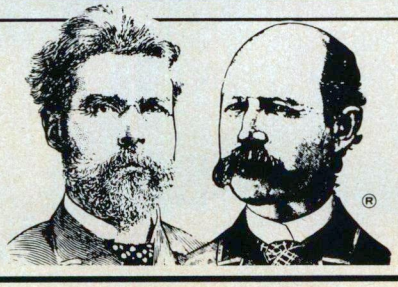
$49.95 (for any version of Apple II)
by Neil Konzen

GPLE is Beagle Bros' "Global Program Line Editor"–still the NUMBER ONE editor for your Applesoft programs.

INSERT AND DELETE characters and words in your basic programs. No more awkward "cursor tracing" to make changes.

SEARCH AND REPLACE: Find every occurrence of any word or variable in a program. Or replace any word with any other.

ESCAPE MACROS: GPLE lets you make Escape-anykey do almost anything you want. For example, Esc-1 can Catalog drive 1. Esc-N can type your name and address, etc.



BUY BEAGLE BROS PRODUCTS AT YOUR SOFTWARE STORE.

Or order by mail (we ship fast!). Call Toll Free (orders only–Mon.-Fri., 9am-4pm Pacific time):
1-800-345-1750 (Calif. 1-800-992-4022).
Visa, MasterCard or COD(or mail a U.S. check). Add $2.50 shipping ($5.00 if overseas) +$3 if COD +6% if California.

BEAGLE BROS, INC. 619-296-6400
3990 OLD TOWN AVE., SAN DIEGO, CA 92110

CIRCLE 148 ON READER SERVICE CARD

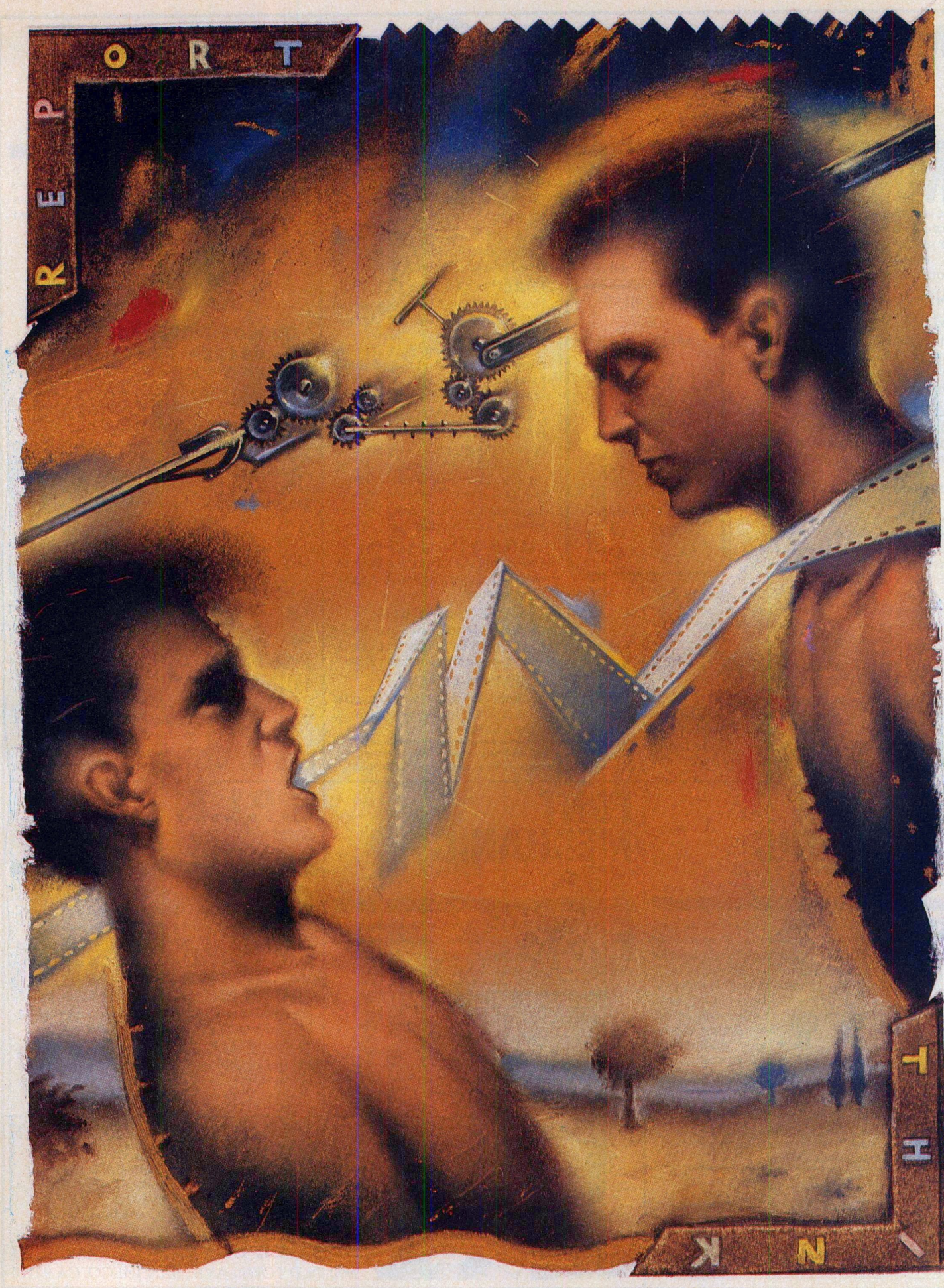


ILLUSTRATION BY CARY HENRIE

ReportWorks and ThinkWorks add data formatting and outlining

MEGAHAUS *augments* APPLEWORKS

AppleWorks has seen its share of add-on products over the past year. It now has at least five mail-merge programs for the word-processing module, five spelling checkers, two graphics programs, six font/printer-improvement utilities, three desk-accessory packages, four or five desktop program selectors, a whole slew of desktop-enhancement programs, two macro programs, gobs of predesigned templates (see "AppleWorks Templates" by Charles Rubin in the November 1986 issue of *A+*)—and, frankly, more books than anyone could possibly read.

Add-on products serve at least two purposes: They overcome limitations in AppleWorks and/or add extra powers that enhance the program, and they let AppleWorks users tailor a system to their personal needs. With the proper combination of extra hardware and add-on software, an AppleWorks system can rival powerful integrated systems on other personal computers.

Two particular add-on programs are one of a kind, and they're both from Megahaus Corporation of San Diego, California. ReportWorks is a powerful and complex reporting program that reads AppleWorks spreadsheet and database files and compiles the information into custom-designed reports. ThinkWorks is an outline generator. Although outline generators are nothing new, this one is the only one that's exclusively for AppleWorks.

Megahaus made its appearance in the AppleWorks add-on market with MegaWorks, a spelling checker/mail-merge product.

MegaWorks was the first mail-merge program for AppleWorks and, as usually happens to firsts, has been outclassed by some of its more recent competitors. Suffice it to say that Megahaus has been involved with AppleWorks for quite some time.

REPORTWORKS

Some AppleWorks users might find ReportWorks the most important AppleWorks add-on available. Not only does it add power to AppleWorks' reporting capabilities, but it can also overcome some of the program's most serious limitations.

ReportWorks lets you selectively extract information from spreadsheets for individual reports. You can create full-page forms and can also use spreadsheets like databases, increasing the number of categories in each record. But be warned: ReportWorks is not for casual AppleWorks users. Because of its many features and capabilities, it takes time and practice to learn and use. If you find yourself pushing the limits of AppleWorks, however, read on.

ReportWorks really begins when you design your AppleWorks files. Knowing ReportWorks before you even set up your AppleWorks database and spreadsheet files can be an advantage. For example, since ReportWorks can combine information from several files into the same report—including mixtures of data-

```
File:   figure
Report: table
Name         Street      City        State       Zip
------------ ----------- ----------- ----------- -----------
Mary Green   298 Acacia  Los Angeles CA          91006
Fred Myrom   93 Barrel WA San Bernardi CA        92108
Raymond Mill 3892 First  Los Angeles CA          91001
Ellen Smith  773 Genesee San Diego   CA          92110
```

Figure 1: "Tables-style" and "labels-style" database reports in AppleWorks

```
File:   Figure
Report: label

Mary Green
298 Acacia
Los Angeles
CA
91006

Fred Myrom
93 Barrel Way
San Bernardino
CA
92108

Raymond Miller
3892 First
Los Angeles
CA
91001

Ellen Smith
773 Genesee
San Diego
CA
92110
```

Figure 2: ReportWorks layout for a form

```
Report:FORM                 REPORT DESIGN             Escape:Main Menu
=======================================================================
<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<< Title Page >>>>>>>>>>>>>>>>>>>>>>>>>>>>
------------------------------ Page Header ----------------------------
QUOTATION                                        B. Upham & Co.
FORM 211/A                                       478 Hathaway Ct.
                                                 Los Angeles, CA  91001

  Description                Units                  Price
-----------------------------------------------------------------
  XXXXXXXXXXXXXXXXXX         XXXXXXXX               XXXXXXXX
  XXXXXXXXXXXXXXXXXX         XXXXXXXX               XXXXXXXX
  XXXXXXXXXXXXXXXXXX         XXXXXXXX               XXXXXXXX
                             ------------------------------------
                                 Total              XXXXXXXX
                                 Tax                XXXXXXXX

                                 AMOUNT DUE ........XXXXXXXX
```

base and spreadsheet files—you can design your AppleWorks system with several separate files, instead of one. Knowing that ReportWorks reads information selectively from the spreadsheet module may prompt you to enter information into a spreadsheet file, when you would otherwise settle for the reporting capabilities of the database module (although it has few mathematical capacities).

After setting up your AppleWorks files, you can begin designing your report exactly as you want it to print, using the ReportWorks design screen. You can position text and fields on the screen with open-apple commands. The arrow keys let you move and reposition each element of the report. When setting up a report in the AppleWorks database module, you first decide if you want a "tables-style" or a "labels-style" report. Tables, in AppleWorks' terminology, present each record on a single line; category names become headings for the columns (see figure 1).

Labels, by AppleWorks' definition, can display records in several lines (i.e., form style). If you want to print a small form, such as a Rolodex card, you have to use the labels-style report because tables-style reports do not allow you to do any free-form formatting.

ReportWorks, on the other hand, does not distinguish between tables and labels, nor does it have to. On the design screen, you decide how many lines are reserved for each record. ReportWorks calls each record in the report an entry. By expanding or shrinking the "entry area," you can determine the number of lines reserved for each record.

For example, you might make entries 1 line long (as in a table), 5 lines long (as in a label), or 60 lines long (as in a full-page form). After establishing the entry area, you can insert fields where you want them to appear in the report. The open-apple-F command inserts a field, and the open-apple-arrows control that field's length.

You can type any text into the report that you like. If you place it in the entry area, this text will appear on every entry in the report, which is especially handy for creating full-page forms. Using the arrow keys, you can adjust the position of all text and fields on the screen. Your final report design might look like the one in figure 2.

If you want, you can set up information for headers and footers in a special section of the design screen. Headers and footers can contain headings that you type, as well as fields. You can also enter information for title and summary pages.

Filling in the Fields

Once you get the hang of the ReportWorks design commands, the layout of a report comes fairly easily—it's almost fun—but the hard part is yet to come. Now you must tell ReportWorks where to find the information that goes into this nice report layout. ReportWorks fills in the fields of a report in two basic ways: by looking into an AppleWorks file and extracting information or by calculating fields elsewhere in the report.

When ReportWorks calculates information, the report fields become much like cells in a spreadsheet. Using pre-established commands and functions, you can add the values in other fields, average the values of many fields, and create conditional statements ("if" statements). ReportWorks has more than 35 special functions for mathematical calculations, in addition to the usual addition, subtraction, multiplication, and so on. Some of the functions in ReportWorks give you calculating power you never had within the AppleWorks spreadsheet module, including the ability to evaluate text strings in formulas, rounding functions, date and time math functions, pagination functions, and several functions for converting from text to numbers and back. Also, ReportWorks has more mathematical and Boolean operators than the AppleWorks spreadsheet module does.

When ReportWorks extracts information from AppleWorks, each field in the report can come from a different AppleWorks file. You can link up to nine database and/or spreadsheet files this way. For example, you might extract names and addresses from your Mailing List file and billing information for each customer from your Invoice file. When preparing a report from a spreadsheet, you can select specific rows that ReportWorks will search for the desired information, and specific columns within those rows.

To do so, you must set up each field in the report—a host of "field definitions" awaits your command. Each field you place on a page must have a name and a type. Types include Text, Numbers, Dates, Times, and Any (Any lets you enter any kind of information). You also need to specify, for each field, which

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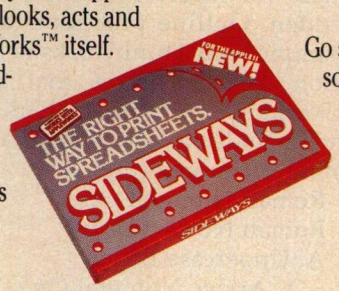

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CIRCLE 154 ON READER SERVICE CARD

AppleWorks file to search and what category in that file to extract, as well as how to enter the information into this report. If you link several files together, the setup is even more complicated.

The manual explains each step of this process, but ReportWorks is the kind of program that could use a book to describe its functions. Expect to spend several hours experimenting with its features. A good knowledge of the AppleWorks database and spreadsheet modules will give you a head start.

Once the report is fully designed, you're ready to begin filling it in. You can create a report that uses all the records in the files you've established, or you can set up reporting criteria (called view criteria) to select specific records for the report. These view criteria are more powerful than AppleWorks' record-selection rules for databases and are also more difficult to use.

Construction of actual reports is where ReportWorks has limitations; it's slow. Reports can take quite some time to compile, and the more file lookups and mathematical computations in the report, the longer it takes. Large and complex reports can be worth the wait, though, especially if they're something you can't do in AppleWorks.

ReportWorks is a valuable tool for users who run into AppleWorks' limitations and who want to set up sophisticated systems for business. Remember, ReportWorks takes some time to learn. ReportWorks templates can be as complex as AppleWorks spreadsheet templates. Finally, if you're not creating large reports from large databases, ReportWorks may be more trouble than it's worth. Each report requires extensive setup and takes time to compile. The larger the database, the more this time investment pays off.

THINKWORKS

ThinkWorks is an outline processor that works with AppleWorks. Outline processing was first made popular by Living Videotext, Inc., creator of ThinkTank (see the review of its successor, More, in this issue). ThinkTank was said actually to help you think by providing tools to help organize your thoughts. Outline processing lets you type lists and outlines on the screen and then go back and rearrange the lists, add more information, swap items, renumber, and more.

Outline processors are a lot like word-processing programs, except they're not really made to manipulate large paragraphs of information; they're meant for lists. Outline processors automatically label elements of an outline in a hierarchical scheme, with subheadings automatically indented under main headings. Moving and rearranging elements of an outline is much different than moving paragraphs, because of the numbering system that must change to accommodate changes in sequence. Finally, outline processors let you view certain levels of outlines and keep other levels hidden. You can take an outline like this one:

I. Preface
II. Chapter One: Introduction
    A. Overview
    B. Learning the System
III. Chapter Two: Getting Started
    A. Overview
    B. How to Begin
    C. Summary
IV. Chapter Three: Conclusion

and view it like this:

I. Preface
II. Chapter One: Introduction
III. Chapter Two: Getting Started
IV. Chapter Three: Conclusion

The more detailed information is still there for future reference; it's just hidden. Outline processors are fairly simple, and ThinkWorks is no exception. Some features that set ThinkWorks apart from the others of its kind include its use of standard alphanumeric numbering:

I. Roman Numeral One
II. Roman Numeral Two
    A. Uppercase Letter
        1. Arabic Numeral One
            a) Lowercase Letter

ThinkWorks allows up to nine levels of headings. A heading can be a single line or paragraph of up to ten lines. Commands for moving information appear in a list on the screen.

The Move command lets you move sections of an outline to other areas, and you can decide how you want to adjust the numbering scheme after the information moves. You can keep all heading levels the same as they were before the move (e.g., uppercase letters remain uppercase letters after moving), or you can indent the information one level (e.g., uppercase letters become Arabic numerals after moving).

Another handy feature of ThinkWorks is its ability to transfer information between outlines, which is especially useful for breaking up large outlines into smaller pieces. You can merge one outline (or portions of it) into any location of another outline. The Zoom command hides and displays various levels of the outline. The program has nine zoom levels—one for each of the outline levels.

ThinkWorks has two options for printing an outline: You can print to a printer or to an AppleWorks word-processing file. Outlines printed to word-processing files can be read intact into the AppleWorks word-processing module—handy if you like using outlines as guides for writing.

ThinkWorks is a well-made outline processor that works with AppleWorks in that it can write to AppleWorks-compatible files. The ThinkWorks program, on the other hand, cannot read AppleWorks files.

If you're in the habit of making lists and outlines, ThinkWorks may be the program you've been looking for. +

Chris Van Buren has written several books and manuals about microcomputing, including Lotus 1-2-3 and the IBM PC *from New American Library. He is currently editor and publisher of the* AppleWorks Exclusive Reference *newsletter.*

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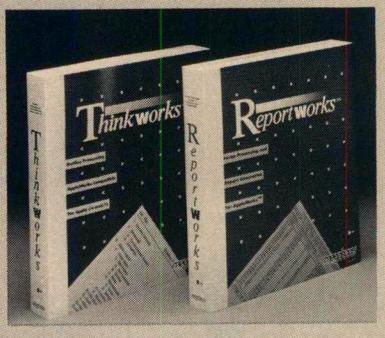

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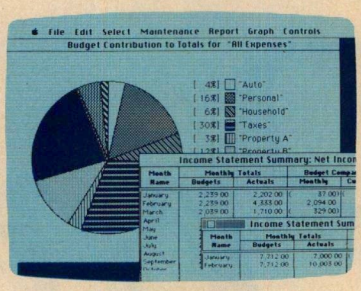

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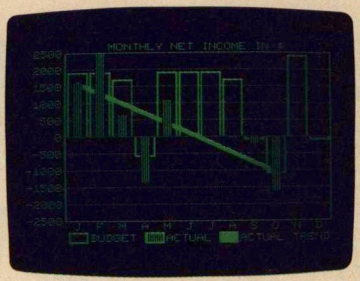

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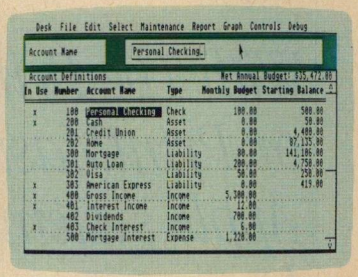

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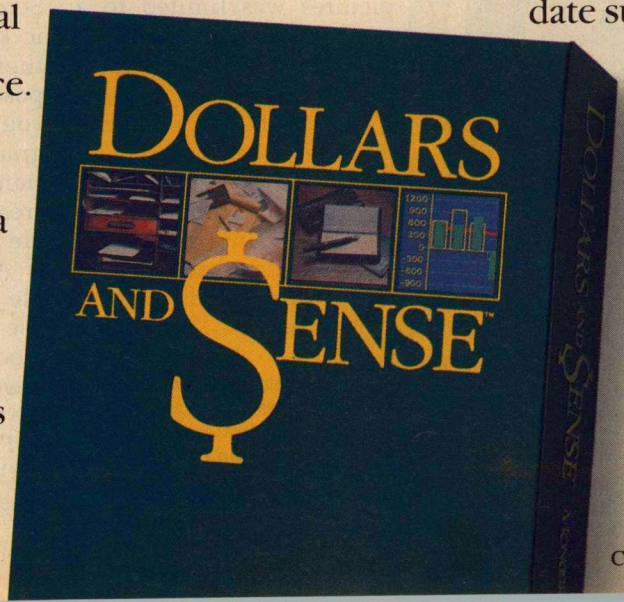

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Enchanted Prints

With The Print Shop or PrintMaster, your Apple system can become a calligrapher, illustrator, and printer.

A long time ago, I wanted to make some fliers, so I bought a rubber-stamp printing set. Do you remember them? The set included a small, grooved wooden block; tiny rubber letters; and tweezers. After a painstaking session of setting each letter into the grooves, I could stamp out a few lines of "type." Then I used picture stamps to illustrate my "copy." As I remember, my choice of pictures was limited to a star and a few animals.

Today, an Apple computer, together with a dot-matrix printer, can be your calligrapher, illustrator, and printer. With a minimal investment in software, you can design and print cards, invitations, stationery, calendars, signs, banners, wrapping paper, bookplates, fliers, certificates . . . I could go on and on.

Figure 1: PrintMaster uses uppercase and lowercase letters, and you can combine different typefaces on a page.

The Print Shop

The Print Shop, the first Apple program to offer a simplistic approach to "printing," is still going strong.

The program consists of the following modes: Greeting Card, Sign, Letterhead, Banner, Screen Magic, and Graphic Editor. The first four modes don't require explanation. Screen Magic lets you freeze dynamic kaleidoscopic patterns and print them, with or without superimposed text (see figure 2). It also lets you print out any standard hi-res graphics image in perfect proportion. The Graphic Editor lets you create original Print Shop-compatible pictures or modify existing ones.

Anyone who can turn on an Apple computer and read menus can use The Print Shop. After selecting a mode from the main menu, you follow step-by-step instructions to create your document.

First, using the keyboard, a joystick, or a KoalaPad, you choose and place the graphic elements. They in-

Figure 3: The new Print Shop lets you print in color.

Figure 2: The Print Shop's Screen Magic opens a Pandora's box of printing possibilities.

clude borders (you get nine to choose from); illustrations (from a library of 60 pictures, symbols, and abstract patterns in three sizes); and type. You have a selection of eight typefaces in two sizes each and three type formats: solid, outline, and three-dimensional. The last thing you do is type in your text, which is automatically left-justified, right-justified, or centered, as you direct. Then you print.

The Print Shop Companion

The Print Shop Companion adds to your printing repertoire by letting you create and print weekly or monthly calendars. The program, compatible with The Print Shop, includes 50 new borders, a border editor, 12 new fonts, a font editor, and an enhanced graphics editor that lets you capture art from other publishers' game and graphics programs for use in The Print Shop. Two bonuses that are especially appealing to children are part of the program: Tile Magic creates kaleidoscopic pictures, and Creature Maker lets you combine the heads, bodies, and legs of different creatures. The manual is full of wonderful ideas for using Print Shop and Companion.

The original Print Shop had two serious flaws. One was that you couldn't see your document before printing it. If, for example, your selected text was too large for your graphic, you didn't find out until it was printed, so you wasted lots of time and paper. The second problem was the lack of a Save option. If you designed a card and wanted to print it later, you had to recreate it from scratch. Happily, an upgrade of Print Shop is now available.

Now you can preview your creation before printing it, as well as save it to disk. Most exciting, the new Print Shop lets you print in color (see figure 3). If you have a printer with multicolor output, you can select different colors for your border, graphics, text, and background.

The new Print Shop includes a utility program that allows you to upgrade your original Print Shop Companion disk, but the Preview option does not work with the Calendar mode. If you own the original Print Shop, you can get the upgraded version of the program from the publisher for as little as $20.

PrintMaster

PrintMaster brought The Print Shop's capablities to other computer systems before it came out with a version for Apple computers.

This program, almost identical to The Print Shop in operation as well as options, lets you create greeting cards, stationery, signs, banners, and calendars. The graphic elements include borders (11), illustrations (122), and typefaces (8). PrintMaster was the first to include Preview and Save options.

PrintMaster has its problems. For one thing, you cannot back-step and edit your designs as you can with

Figure 4: Sample image from Brøderbund's Holiday Edition diskette

The Print Shop. Also, PrintMaster is considerably slower than The Print Shop. I was annoyed that every time you boot the program, it asks you to calibrate your joystick. Another difficulty involves the program's error trapping. Sometimes when your data disk or the wrong side of the master disk is in drive 1, the program flashes a message instructing you to swap disks, but the drive keeps spinning. You're forced to remove a disk from an active disk drive and insert another into it, which can be harmful to the data.

Neither of these programs allows a great deal of flexibility. When you design cards, signs, and so on, you must use one of the layouts the software offers. You can't combine different pictures in one document. The typefaces are so bold that you are limited to only a few characters on a line. Depending on the face and size of the type you choose, you may find that only five or six words fit on a page.

Output from one of these programs is similar to that of the other, so stylized that it is immediately recognizable as a Print Shop or PrintMaster creation. Nevertheless, these programs are fun, useful, and easy to use.

Summing Up

The Print Shop and PrintMaster are so similar that it's difficult to recommend one over the other.

PrintMaster's advantages over the original Print Shop were its Preview and Save options, but the new Print Shop includes these functions. Now PrintMaster's main distinction is that you can use uppercase and lowercase and combine different fonts in one design (see figure 1).

The graphic elements, pictures, borders, and type differ between the programs, and I cannot say that one is preferable to the other. Both publishers have come out with diskettes of additional pictures, fonts, and borders for use with their programs—you can use the graphics for either of these programs with the other. An example of such an adjunct diskette is the new Holiday Edition diskette in Brøderbund Software's Graphics Library series for use with The Print Shop. Its graphics, typefaces, and borders include images and symbols for more than 15 holidays (see figure 4).

If cost is a consideration, you'll want PrintMaster (see figure 5). The single package includes the ability to make calendars as well as greeting cards, stationery, signs, and banners (to get calendars in the Print Shop format, you need The Print Shop Companion), and you get more graphic elements on the disk. If you're willing to spend more money, I'd recommend the Print Shop/Print Shop Companion combination, which gives you many more features, a better user interface, and the option of printing in color.

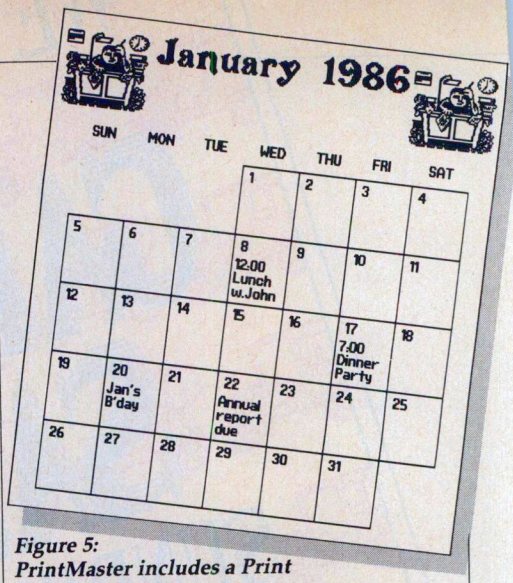

Figure 5: PrintMaster includes a Print Calendar function.

So make your choice and get lots of paper and ribbons. Have a garage sale and plaster the neighborhood with signs. Get organized and print out detailed weekly calendars. Have a party, design and print the invitations, and decorate the place with eye-catching banners. Computer . . . printer . . . action! ✚

Roberta Schwartz is a contributing editor of A+ and a free-lance computer-graphics artist. She teaches at the New School in New York City and is coauthor of a book on Apple-computer graphics.

EDITOR'S NOTE: Just as this issue of A+ was going to press, a U.S. district court decided that the PrintMaster program from Unison World infringed on the copyright of The Print Shop from Brøderbund. See next month's "News-Plus" for more on this historic court decision.

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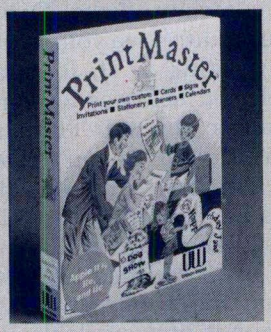

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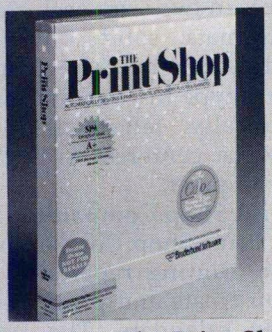

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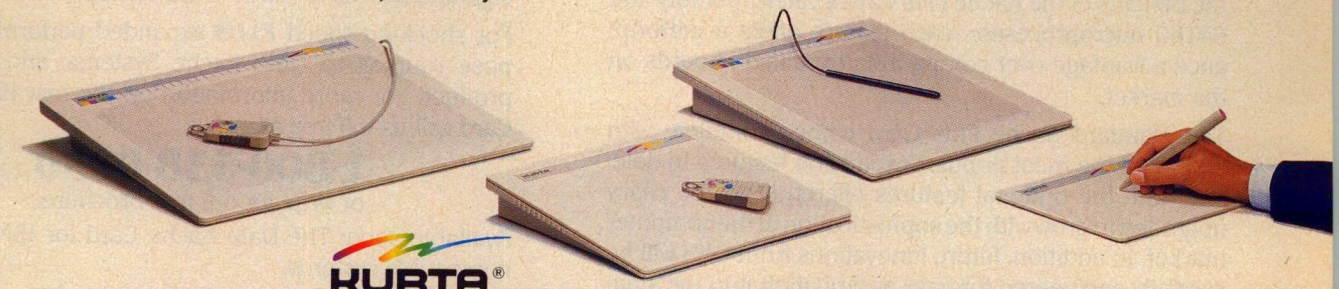

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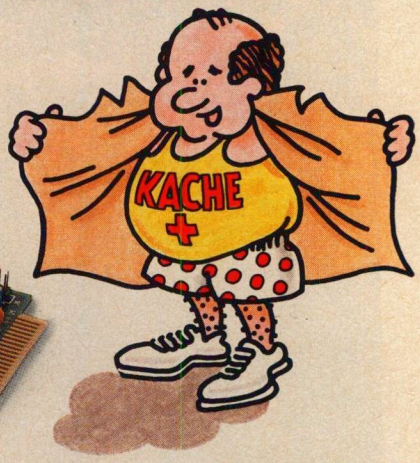
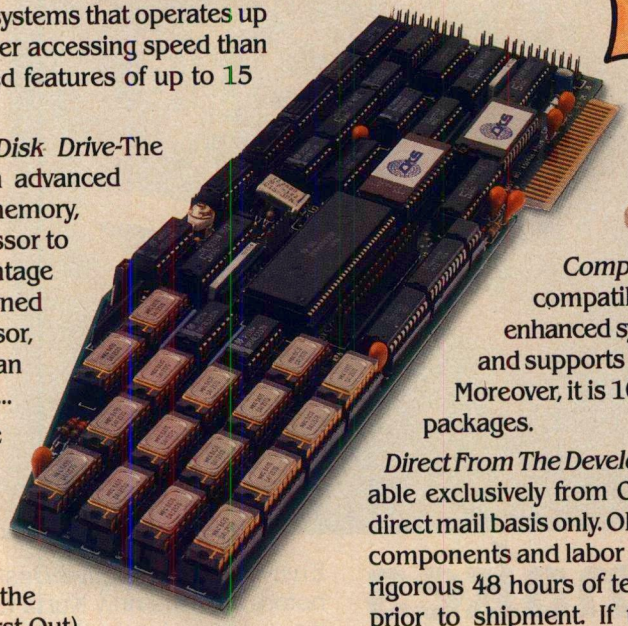


*The Kache Plus Card...Shocking Speed **PLUS** Expanded Performance*-The Kache Plus Card is a powerful floppy disk adapter board for Apple *II* systems that operates up to six floppy drives. It offers faster accessing speed than hard disk drive ***PLUS*** the added features of up to 15 popular expansion boards.



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AUTOMATICALLY saves data in RAM disk mode for future transfer to floppy disk

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CIRCLE 178 ON READER SERVICE CARD

IIGS UPDATE

USING THE APPLE IIGS TOOLBOX

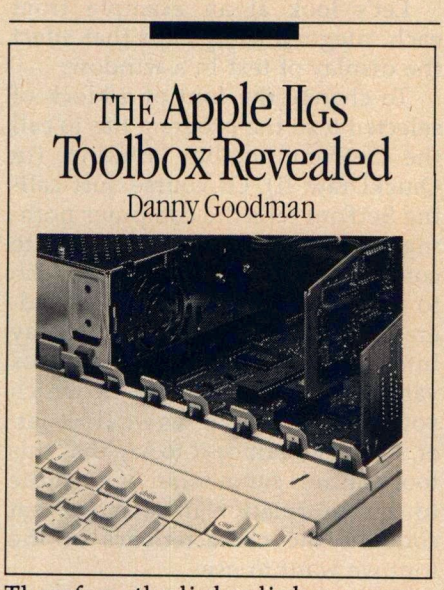
In last month's issue (pages 77–85), we took a first look at the programmers' toolbox of the Apple IIGS. Now we'll discuss the link between your program and the tools. We'll be talking in generic terms because the specifics of incorporating tool sets into programs vary slightly from language to language. Fortunately, the concepts are similar, especially among the languages in the Apple IIGS Programmers' Workshop.

A IIGS language usually comes with two sets of toolbox-related files. One set is source code, the other object code.

The source-code files contain many predefined variables and data structures carrying readily identifiable names that you can begin using in your own source code. They will save you from declaring the same toolbox variables over and over in each application. Moreover, you are assured that they are done correctly.

You can use these predefined variables in your source-code listing, provided you instruct the compiler to incorporate the external source files into your source code at compile time. To do so, you place instructions for the compiler (compiler directives) at the top of your source-code listing to include or use as many of those source files as you need. The files are typically grouped according to tool set, making it easy to specify those files to be merged into your program.

The object-code files that come with the language contain the actual routines that make toolbox calls possible in your program—something the core compiler does not furnish.



Therefore, the linker links your program's object code with as many tool-set object modules as you direct in the command to start the linker. The result will be a load file that makes the appropriate calls to the Tool Locator each time a tool is requested as the program runs.

The Include or Use instructions are simply assembler or compiler directives. They do not represent the calls to the toolbox routines while the program runs. You place actual calls to the toolbox throughout the program as needed.

CALLING A TOOL FUNCTION

Apple has documented the toolbox calls in full detail in a two-volume set called *Apple IIGS Toolbox Reference*. A call to a toolbox routine, as listed in these references, looks like any statement that might be a part of a programming-language vocabulary. Here are some examples of tool calls you might make to the Window Manager:

NewWindow	SetWTitle
CloseWindow	SelectWindow
DisposeWindow	

Most of these statements are in plain language, although occasionally a tool call is abbreviated. SetWTitle, for example, is short for "Set Window Title." Notice, however, that all tool calls are single words. This restriction is for the convenience of the compiler, since compilers find single-word commands easier to recognize than those consisting of multiple words.

Most languages try to adhere to the vocabulary of tool calls defined in Apple's reference material, but that's not always the case. In fact, you may encounter languages, particularly assembly languages, that have different ways of making tool calls. Instead of using the tool-call vocabulary as is, the assembler may require you to precede the call with an underscore character, like this:

```
_NewWindow
```

The underscore is for the convenience of the assembler: It recognizes any word beginning with an underline as being a toolbox call. You may also find languages that use slightly different words for some toolbox calls. When this happens, the new vocabulary words are similar enough for you to make an immediate connection between the new words and the ones defined in Apple's documentation.

Jumping to the Toolbox

In case you're wondering what happens inside the computer when

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you make a toolbox call, here is a synopsis of the procedure.

Typically, your program will be following a list of instructions that you write (although converted into machine language). The instruction pointer will be wildly directing the microprocessor to follow instructions from your program loaded in the perhaps tens of thousands of RAM addresses. When the microprocessor encounters a toolbox call, the instruction pointer jumps to the address of the toolbox routine (perhaps in ROM). As soon as the toolbox routine is complete, the instruction pointer returns to its jumping-off spot in RAM and continues working its way through your program instructions (see figure 1).

If you've had experience programming in any language, you will recognize this methodology as that of a simple subroutine from your main program. In this case, however, you don't have to write the subroutines, since they have already been designed and optimized for you. Nor do they take up any disk space in your finished program file.

PASSING PARAMETERS

Toolbox calls are occasionally self-contained, action-oriented functions. An example is one called HidePen. When you issue this tool call, it unilaterally turns off the drawing pen on the screen. When you issue that statement, the tool simply does its action and returns control back to the program—the tool has nothing to report back to the program. The vast majority of toolbox routines fall into one of three categories, however:

RELATIVELY FEW TOOLS ARE FREESTANDING FUNCTIONS.

1. they require input
2. they generate output
3. they require input and generate output

Let's look at an example from each category, using calls that affect the display of text in a window.

To change the font of a block of selected text, the program has to call the SetFont toolbox routine (in QuickDraw II). Of course, just calling SetFont tells the computer nothing, since somehow we need to convey the particular font we wish to set. That information is considered input to a toolbox call. The way information is passed to the toolbox varies with the language in which you're programming, as we'll see later. For now, suffice it to say that this tool requires submission of a handle to the information in memory that contains the characteristics of the font we want to use.

The opposite occurs when our program needs to know what the current font is. To obtain that information, the program uses the GetFont tool call (also in QuickDraw II). In this case, we have no input for the tool, because it assumes we want to know the current font. When the tool routine has finished, however, the tool will need to give us information, its output. Again, the way this output reaches our program depends on the language in use, as we'll see.

The third category consists of tool calls that require input before running and produce output when they're finished. An example of such a call is StringWidth. This call needs to know the location in memory of the text string that the tool is to measure. When the tool has measured the desired string, the result is then produced in the form of an integer that corresponds to the number of picture elements, or pixels, on the screen the string occupies.

As you begin to program for the IIGS, you'll quickly see that most of the tools fall into the types that involve input, output, or both. Relatively few tools are freestanding functions.

PARAMETERS AND THE STACK

The best way to illustrate the way parameters pass to and from toolbox routines is to examine what happens to the stack during a toolbox call. Only assembly-language programmers will have to bother with direct stack manipulations. High-level-language programmers will have the impression of using other means of passing parameters; in reality, the load file generated by a high-level compiler and linker uses stack mechanics, just as assembly-language programmers do. Everyone, therefore, can benefit from this explanation.

Input Parameters

When we called SetFont, above, we had to pass the handle to the font we wanted as the current font. To do this procedure with the stack, an assembly-language program starts by pushing the handle onto the stack (see figure 2).

Since the stack gets smaller and the contents of the stack pointer (SP) decrement when an item is pushed onto the stack, the illustration makes perfect sense.

Once the parameter is on the stack, the program can call the toolbox routine. When the routine runs,

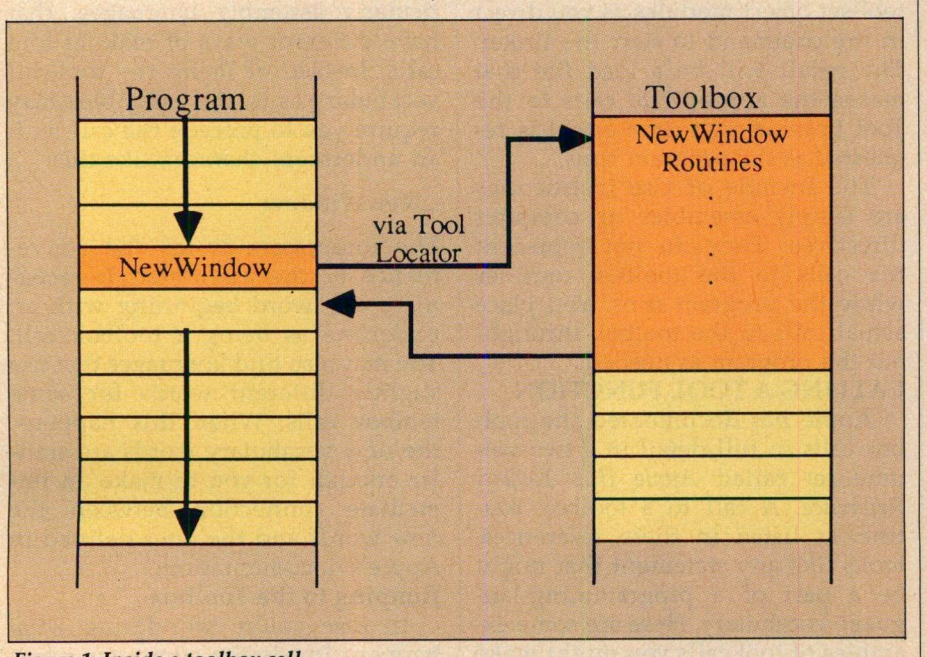

Figure 1: Inside a toolbox call

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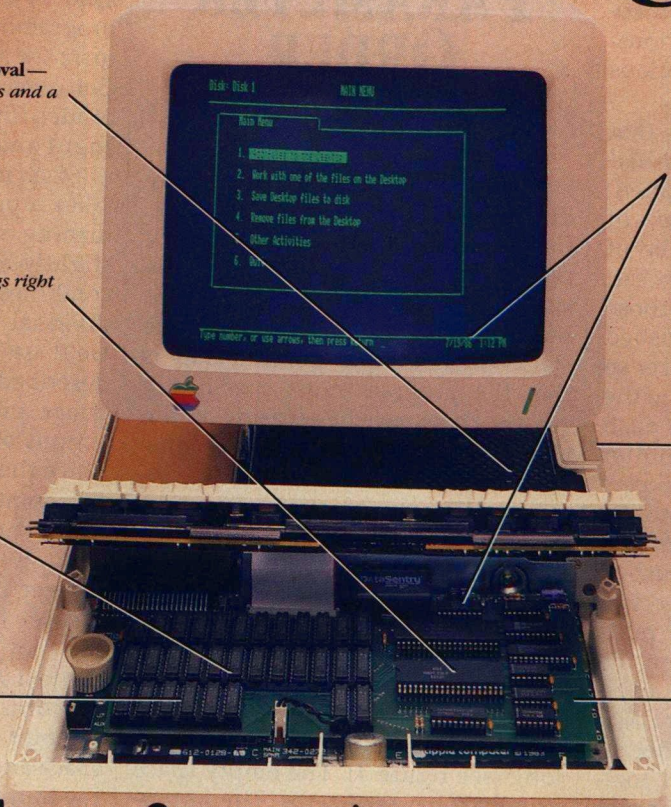

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it automatically looks to the stack for the information it needs—a handle in this case—and pops it from the stack without any intervention from the assembly-language program (see figure 3). Once the routine is finished, control of the program returns to the assembly instructions, and the stack returns to its previous status.

Many toolbox calls require that more than one parameter be pushed onto the stack before being called. Parameters, such as a sequence of pointers and table arrays, can be of unequal length. When a toolbox call expects multiple parameters, those parameters must have been pushed onto the stack in the proper order so that the tool will pop them in the right order. For example, if you push first an integer and then a pointer onto the stack, the tool must expect to pop a pointer and then an integer from the stack—the reverse of the order in which they were pushed onto the stack. If the tool expects a two-byte integer and instead pulls half of a four-byte pointer, then the tool will surely fail and cause a system error. The *Apple IIGS Toolbox Reference* manuals detail the order of multiple parameters for each toolbox call. Observe parameter order religiously.

OBSERVE PARAMETER ORDER RELIGIOUSLY.

Output Parameters

For tools that don't require input but emit output, we have an entirely different methodology for the stack. Just as a tool knows how to quietly pop an input parameter from the stack, so too does it know how to push an output parameter onto the stack—sort of. The qualification is that the program must specifically request that space be set aside on the stack for the output that is to come from the toolbox call.

For example, if our program is about to call the GetFont tool, which sends as its output the handle to the current font, we must make room for that handle on the stack before calling the tool.

In this case, we must make room for four bytes of data, since the handle coming back will be four bytes long (see figure 4). The empty space usually consists of zeros. The importance of this procedure is that the stack pointer must decrement so that the tool won't overwrite important stack data with the output. If a tool is to output multiple parameters, then you must reserve enough space for them all on the stack.

When a tool supplies output as its result, it is said to return a particular kind of data. For example, in good programmers' jargon, GetFont "returns" a handle to the current font. Get used to hearing *return* as a way of identifying a tool's output.

Input and Output

Stack manipulation for a tool that takes input parameters as well as returning output parameters is only slightly more complicated, in that it combines the actions of the two individual actions. To demonstrate, we'll use the StringWidth tool call described earlier. An assembly-language programmer has to plan the actions of the tool before calling it. Since the tool will return an integer representing the pixel width of a text string, the stack must have enough empty space available for an integer that the tool will push. Of course, the pushing happens after the tool has popped the pointer to the text string from the stack. In other words, the order in which the assembler program must push the space and pointer is (1) the space for the output and (2) the pointer to the text string (see figure 5).

Then the assembler program can call the StringWidth tool. The tool-

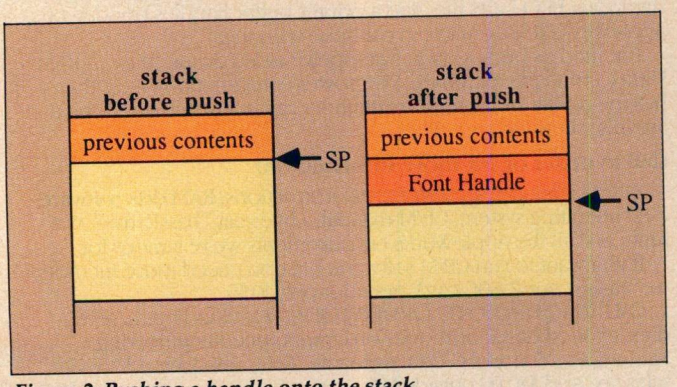

Figure 2: Pushing a handle onto the stack

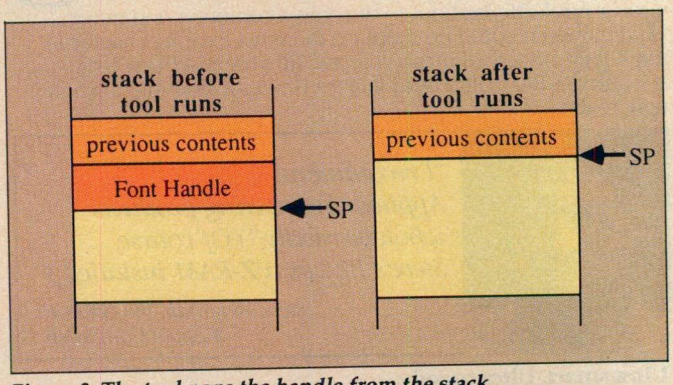

Figure 3: The tool pops the handle from the stack.

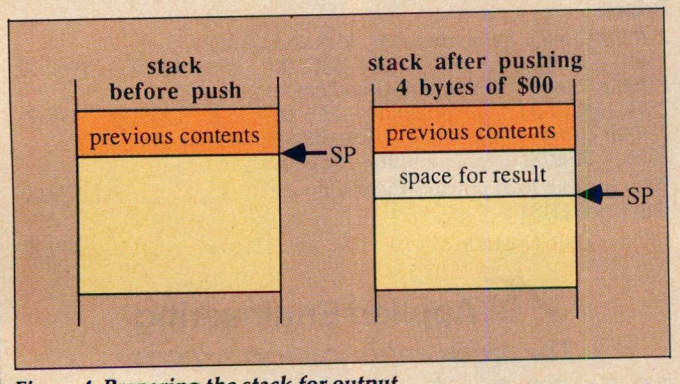

Figure 4: Preparing the stack for output

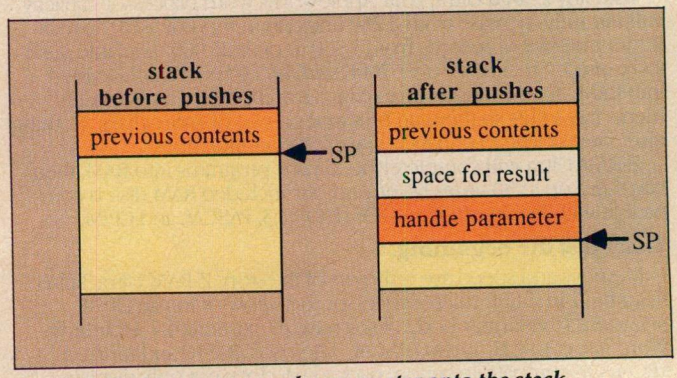

Figure 5: Pushing a space and a parameter onto the stack

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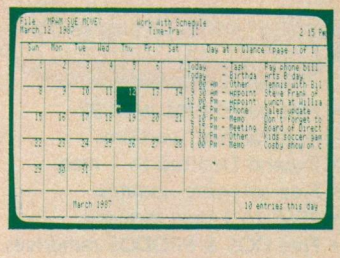

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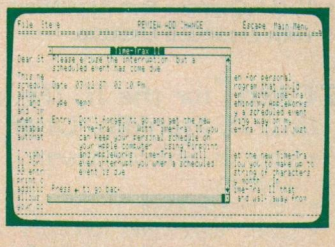

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box routine automatically pops the string pointer from the stack and writes the resulting pixel-width integer into the space remaining for it on the stack (see figure 6).

Again, by preparing the stack prior to a tool call, an assembly-language programmer (or a high-level-language program under direction of the compiler) is able to lay in any number of blank spaces and input parameters for complex tools that have multiple input and output parameters.

High-Level Parameters

Although a high-level compiled language usually doesn't bother with stack manipulation, you will still have to furnish input parameters and know how to obtain output parameters after IIGS toolbox calls. Pascal and C are remarkably similar to each other in working with toolbox routines that accept and return parameters. Therefore, we'll generalize here a bit to give you an overview of the mechanics of handling parameters in these languages.

Both languages have a syntax that lets programmers assign the value returned by the tool to a variable name. You attach input parameters to the toolbox call by placing them in parentheses immediately following the call in the program listing. Except for minor variations in punctuation, the following listing shows how the StringWidth toolbox call might look inside a high-level-language listing. The call measures the width of a text string whose location in memory has been identified earlier in the program as a pointer called txt:

```
width = StringWidth(txt);
```

Behind the scenes, the language places the pointer (named txt) on the stack, calls the StringWidth routine, and places the width integer on the stack. The language goes one step further by assigning the value of the width integer to the variable called width. Once the language has run this program function, it can use the variable name width in calculations such as determining the center point of the text string so that the text can be centered in the window before display of the string.

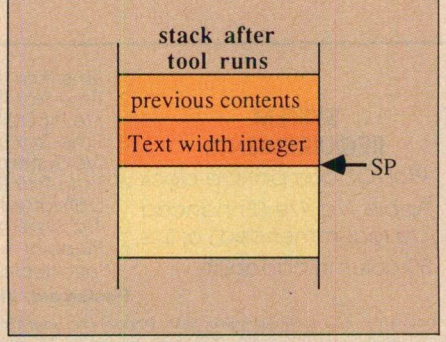
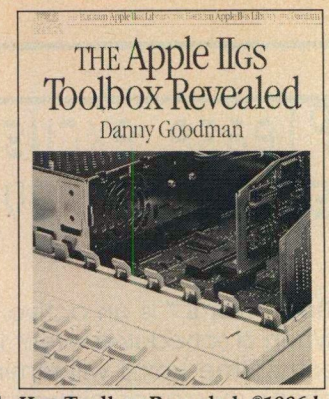


Figure 6: This toolbox routine leaves only its output on the stack.



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Toolbox calls that do not return output are often called procedures in a high-level language. Tool calls that return output are called functions. Both procedures and functions can pass input parameters, but only functions get output parameters in return. Your language manual should demonstrate ways of nesting procedures and functions to help reduce the number of lines of source code your programs require. For example, if your program has only one instance in which you need the value StringWidth returned for use as an input parameter in a different toolbox call, you can skip the step of defining the width variable. Instead, you can use the StringWidth(txt) function, itself, as an input parameter. Its returned value (the width) will be passed directly to the other call. ✚

Danny Goodman has been using, programming, and writing about personal computers since the late 1970s. He is the author of nine books, including Going Places With the New Apple IIc, *which has been translated into four European editions, and* The Idea Book For Your Apple II. *"Using the Apple IIGS Toolbox" is adapted from* Apple IIGS Toolbox Revealed, *©1986 by Danny Goodman. Used by permission of Bantam Books, Inc. All rights reserved.*

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79. Wild Card II Copier
C H PRODUCTS (HAYES)
29. Mach II Joystick (II+ Or IIe)
37. Mach III Joystick (II+ Or IIe)
INTERFACE MODULES
39. 64K & 80 Column Card (IIe)
49. Floppy Drive Controller (II+, IIe)
155. Full Ht 143K Floppy Drive (IIe)
155. Half Ht 143K Floppy Drive (IIe)
155. Half Ht 143K Floppy Drive (IIc)
KENSINGTON
69. System Saver Fan
KOALA
75. Touch Tablet
ORANGE MICRO
49. Hot Link Serial To Parallel Cable (IIc)
79. Grappler Plus or Grappler C
135. Buffered Grappler Plus
QUARK
995. 10 MB Hard Disk (IIe, IIc, Or Mac)
SMT
39. Parallel Interface And Cable (II+, IIe)
TG PRODUCTS
19. Joystick (IIe, IIc)
TITAN
155. 128K RAM Card
229. Accelerator IIe
TRACKHOUSE
79. Numeric Keypad (IIe)
VIDEX
179. Videoterm 80 Column Card
189. Ultraterm 132 Column Card
25. Soft Video Switch

DISKETTES

CONROY-LAPOINTE
$ 13. 10 ea. 5¼" SS/SD (Apple)
99. 100 ea. 5¼" SS/DD (Apple)
25. 10 ea. 3½" SS/DD (Mac)
115. 50 ea. 3½" SS/DD (Mac)
29. 10 ea. 3½" DS/DD (Mac)
115. 50 ea. 3½" DS/DD (Mac)
259. 100 ea. 3½" DS/DD (Mac)
MAXELL
13. 10 ea. 5¼" SS/DD (Apple)
32. 10 ea. 3½" DS/DD (Mac)

MONITORS

AMDEK
$119. 300G 12" Green Composite
129. 300A 12" Amber Composite
ZENITH
109. 1220 Amber Composite
109. 1230 Green Composite

6. RCA Monitor Cable

PRINTERS

EPSON
$289. AP 80 75 cps, 15 NLQ
389. FX 85 160 cps, 32 NLQ
STAR MICRO
289. NX 10 120 cps, 25 NLQ
379. SD 10 160 cps, 40 NLQ
PANASONIC
269. P 1091 120 cps
SMT
39. Parallel Card With Cable
CENTRAL POINT
19. Laser 128 Parallel Printer Cable

MODEMS

CONROY-LAPOINTE
$195. 1200 External
389. 2400 External

SURGE SUPPRESSORS

CURTIS
$ 29. Diamond 6 Outlets
35. Emerald 6 Outlets, 6' Cord
46. Sapphire 3 Outlets, RFI Filter
55. Ruby 6 Outlets, RFI Filter, Cord

UTILITY SOFTWARE

BORLAND
$ 42. Turbo Pascal (Requires CP/M)
36. Turbo Toolbox
CENTRAL POINT
23. Copy II Plus
DATA TRANSFORMS
63. Fontrix
FUNK
37. Sideways (DOS 3.3 Or ProDOS)
MICROSTUF
109. Crosstalk (Requires CP/M)
OMEGA
75. Locksmith
TERRAPIN
59. Logo
UNITED
79. ASCII Express (DOS 3.3 Or ProDOS)
VIDEX
35. Appleworks Modifier

BUSINESS SOFTWARE

ASHTON-TATE
305. dBase II (Requires CP/M)
BPI
219. Gen. Accounting, AR, AP, PR (IIe)
235. Gen. Accounting, AR, AP, PR (ProDOS)
DOW JONES
145. Market Manager Plus
199. Market Analyzer
LIVING VIDEOTEXT
89. Think Tank
MEGAHAUS
75. Megaworks Or Reportworks
MICROPRO
265. WordStar Professional
MICROSOFT
62. Multiplan (DOS)
PINPOINT
42. Pinpoint
QUARK
79. Word Juggler & Lexicheck
SSI (SATELLITE)
99. WordPerfect
SOFTWARE PUBLISHING
79. PFS: File, Write, Graph Or Report

GAMES

ELECTRONIC ARTS
$ 29. Sky Fox Or Dr. J & Larry Bird
39. Ultima III Or IV
HAYDEN
30. Sargon III
INFOCOM
29. Hitchiker's Guide Or Zork I, II Or III
MICROPROSE
23. F-15 Strike Eagle
SPECTRUM HOLOBYTE
25. GATO (Requires 128K)
30. Orbiter Or Tellstar I (IIe, IIc)
49. Tellstar II (IIe, IIc)
SUBLOGIC
33. Flight Simulator II

HOME & EDUCATIONAL

BRODERBUND
$ 32. The Print Shop
38. Print Shop With Refill
45. Bank Street Mailer Or Filer
85. Bank Street Combo
MONOGRAM
79. Dollars & $ense (II+, IIe Or IIc)
SIMON & SCHUSTER
33. Typing Tutor III Or Spell Check
SPRINGBOARD
19. Clip Art Vol 1
27. Clip Art Vol 2
35. Newsroom

1•800•547•1289

Business Accounts: 1•800•4•CONROY
In Oregon: 1•800•451•5151
Hours: 6-6 Pacific Mon-Fri, 8-4 Sat • Local: (503) 620-9878

ORDERING INFORMATION

Shipping Charges:
- US & Puerto Rico — 3% ($6 minimum)
- APO, FPO — US rate PLUS $5
- Canada — 12% ($15 minimum)
- Foreign — 18% ($25 minimum)

- Heavy items may require additional shipping charges.
- Prices reflect a 3% discount for Conroy-LaPointe Credit Card or cash. Add 3% for other credit card purchases.
- Customer Service: (503) 620-9877
- Prices and availability subject to change without notice.

LASER 128: Better than Apple® at half the price.

- 128K RAM, 32K ROM
- 65C02 CPU
- 5¼" Floppy Drive, Internal
- 1 Expansion Slot, IIe
- 1 Parallel Port
- 2 Serial Ports
- External Drive Port
- Numeric Keypad
- 4 Cursor Keys
- 10 Function Keys
- Supports Double Hi Res
- Mouse/Joystick Port

$469 With Monitor And Cable
List Price $599

$895 Includes Monitor, 2nd Floppy Drive, Printer, Cables
List Price $1395

A45

Conroy•LaPointe Inc.

CIRCLE 129 ON READER SERVICE CARD

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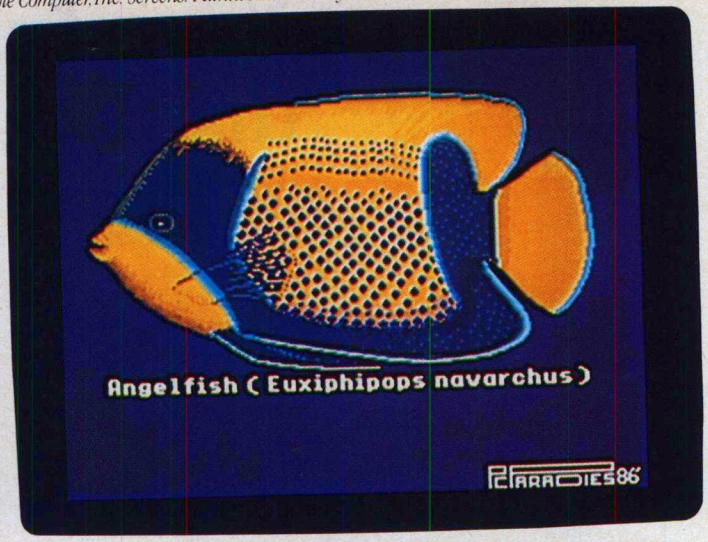
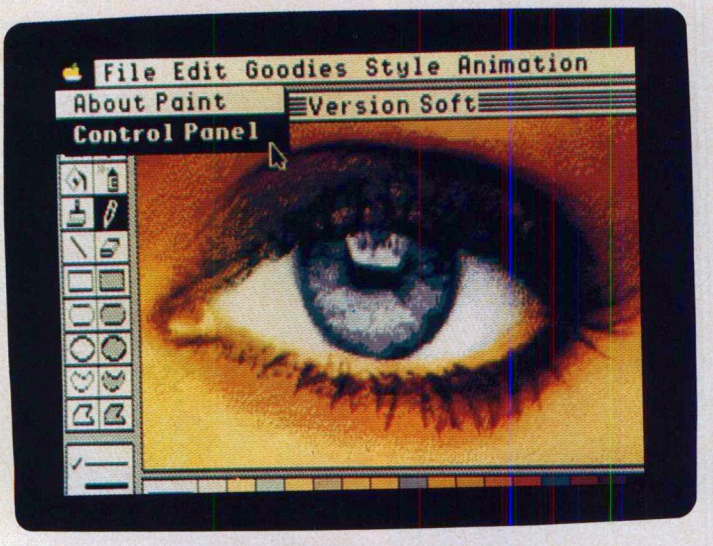
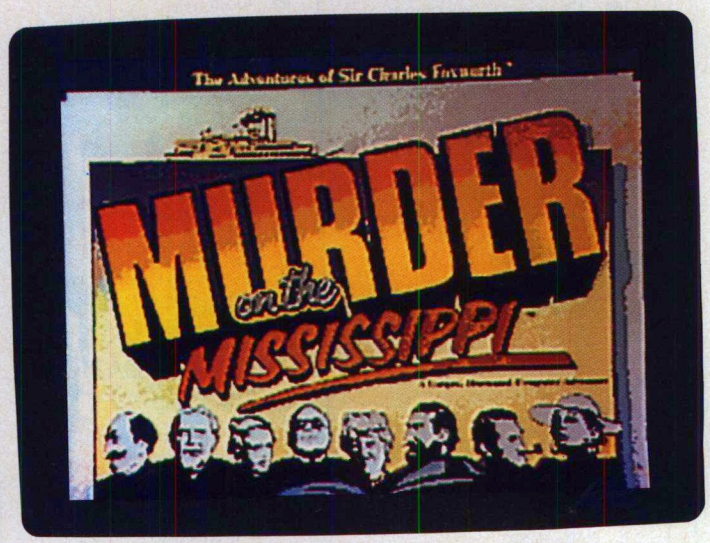
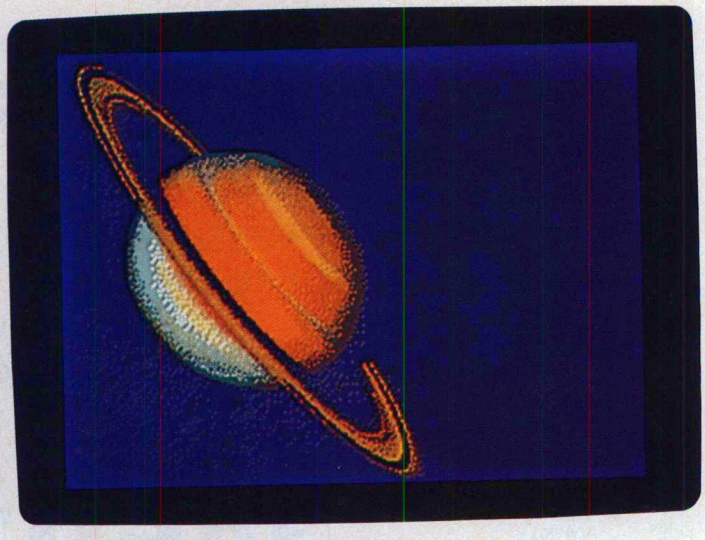
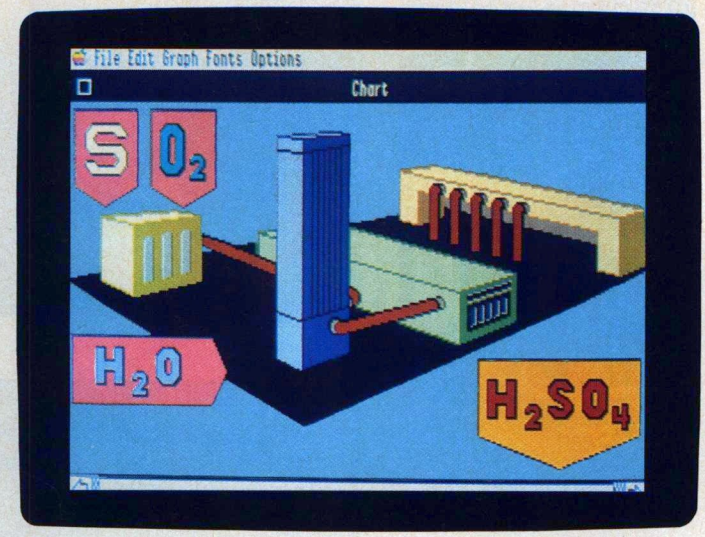








You won't believe



Every image you see here was generated by the new Apple IIgs™ Personal Computer.

It can create graphics in 4,096 colors. With near-photographic quality in two new modes–640 x 200 or 320 x 200 pixels.

The power behind this display is a 16-bit 65C816 microprocessor and a standard 256K of RAM, expandable to an awesome 8 megabytes with the appropriate card.

Even with such spectacular talents, the Apple IIgs hasn't forgotten its heritage. In fact, we've combined the hearts and minds of the Apple IIe and the Apple IIc on a single IIgs chip. So it can run nearly all 10,000 existing Apple II programs–but up to three times faster than they've ever run before.

Like the IIe, the Apple IIgs is eminently expandable, with seven expansion slots for peripherals and a new memory expansion slot. Like the IIc, it has built-in peripheral ports for disk drives, printers, modems, the AppleTalk® Personal Network and Apple DeskTop Bus devices such as a detachable keyboard and mouse.

But you haven't heard anything yet. Because this Apple® is the only personal computer with a 32-oscillator sound chip capable of synthesizing up to 15 separate voices.

That means it can reproduce everything from the glory of a symphony orchestra to the subtleties of human speech.

For a closer look, visit your authorized Apple dealer.

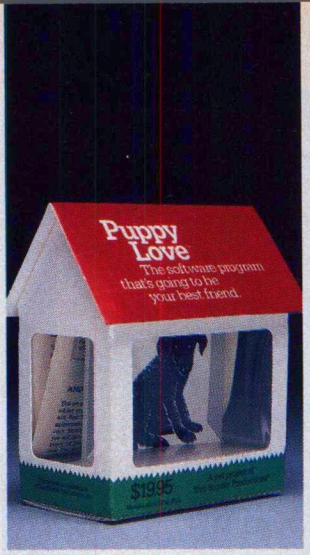
You'll find it an eye-opening experience. And that's just the half of it.

The new Apple IIgs. The power to be your best.℠

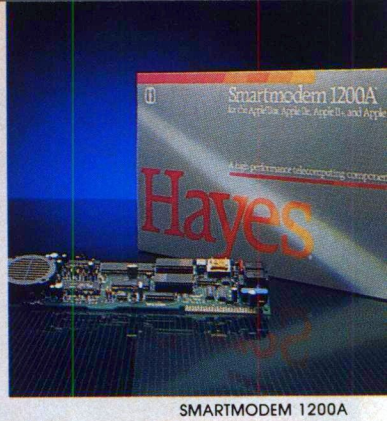
your ears, either.

ECHO IIb

SILENT SERVICE

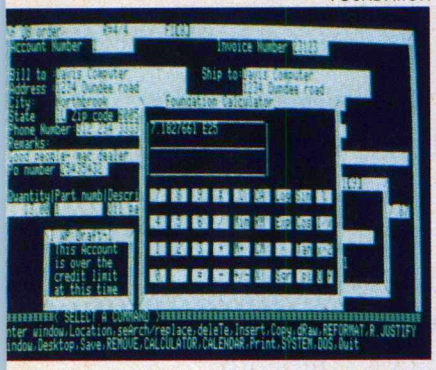


PUPPY LOVE



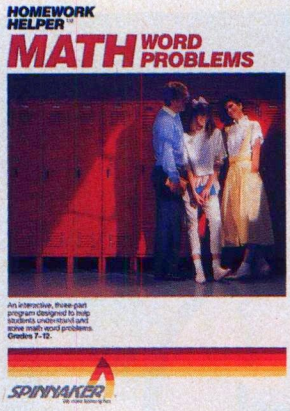
SMARTMODEM 1200A

FOUNDATION

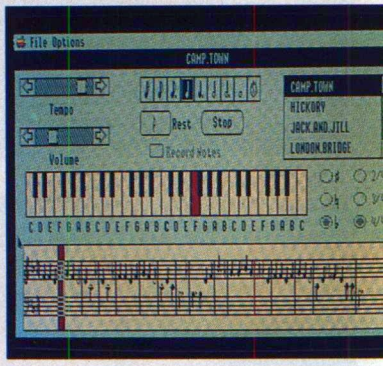


816/PAINT

HOMEWORK HELPER



KIDSTIME II



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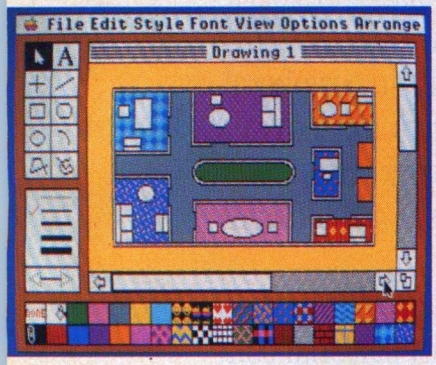
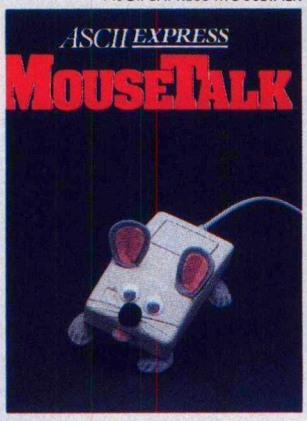
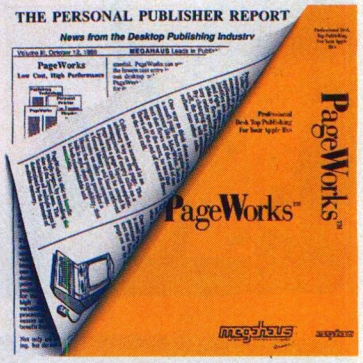


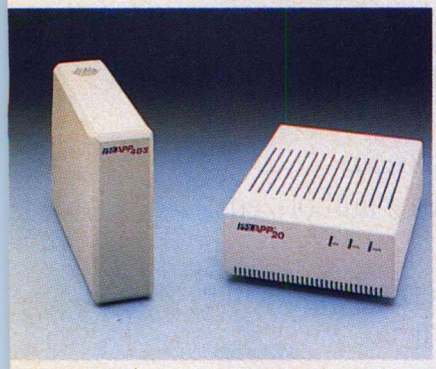
ASCII EXPRESS MOUSETALK



PAGEWORKS



PROAPP 40S AND PROAPP 20



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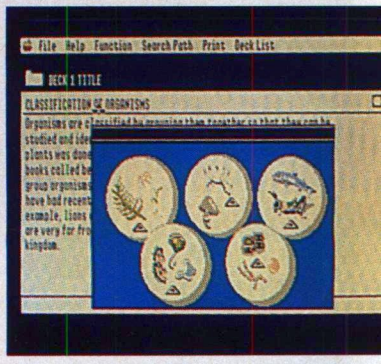
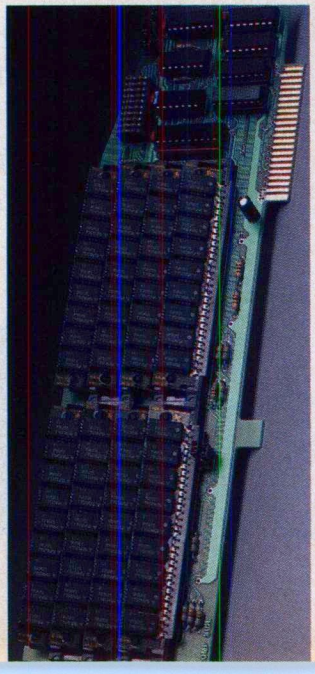
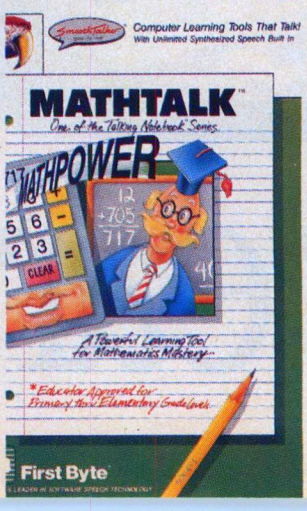


OCTORAM

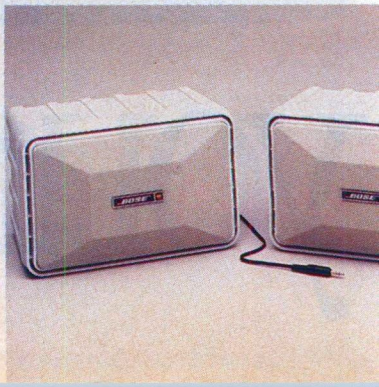


MATHTALK



TALKING TEXT WRITER

BOSE ROOMMATE



BY CAROL PERSON AND LISA RALEIGH

IIGS UPDATE

NEW PRODUCTS

A sampling of new products that take advantage of IIGS features—many are available now; others are close behind.

HARDWARE

COMPANY	PRODUCT	PRICE	DESCRIPTION	READER SERVICE NUMBER
Apple Computer, Inc. 20525 Mariani Avenue Cupertino, CA 95014 (408) 996-1010	**Apple 3.5 Drive**	$399	Disk drive with 800K of storage—works with both IIGS and Macintosh	—
	Apple 5.25 Drive	$299	New disk drive that matches "platinum" color of IIGS	—
	Apple II SCSI Card	$129	Interface card—allows IIGS to connect devices using SCSI standard	—
	Hard Disk 20SC	$1299	20-megabyte SCSI hard-disk drive	—
Applied Engineering P.O. Box 798 Carrollton, TX 75006 (214) 241-6060	**GS-RAM**	256K, $169; 512K, $219; 1MB, $299; 1.5M, $379	Memory-expansion card with up to 3.5 megabytes of RAM using 256K chips and piggyback board	—
	GS-RAM Plus	Call co. for price	Memory-expansion card with up to 8 megabytes of RAM using 1-megabyte chips and piggyback board	—
AST Research, Inc. 2121 Alton Avenue Irvine, CA 92714 (714) 553-0340	**AST-2000**	$2795	20-megabyte hard-disk drive with SCSI tape subsystem	502
	RamStakPlus	Call co. for price	One megabyte of memory expansion that uses IIGS built-in RAMdisk features	503
	SprintDisk	$295	Memory-expansion card with one megabyte of RAM	504
	AST-VisionPlus	Call co. for price	Video digitizer that includes special effects such as zoom-in and inverse video	505
Bose Corporation 100 The Mountain Framingham, MA 01701 (617) 879-7330	**Bose RoomMate**	$229 per pair	Compact loudspeakers with built-in amplifiers	506
DataDesk International 7650 Haskell Avenue Van Nuys, CA 91406 (800) 826-5398 In CA (818) 780-1673	**Turbo-101 Enhanced Keyboard**	$149.95	IBM PC-style keyboard	507
Hayes Microcomputer Products, Inc. P.O. Box 105203 Atlanta, GA 30348 (404) 441-1617	**Smartmodem 1200A**	Call co. for price	Internal 1200-baud modem	508
Impulse, Inc. 6860 Shingle Creek Parkway Suite 110 Minneapolis, MN 55430 (612) 566-0221	**(Phoenix)**	Call co. for price	Add-on board with MIDI interface that does audio and video digitizing	509
Kurta Corporation 4610 South 35th Street Phoenix, AZ 85040 (602) 276-5533	**Kurta Graphic Input System**	$495	Digitizing tablet (mouse alternative)	510
MDIdeas 1111 Triton Drive, Suite 205 Foster City, CA 94404 (415) 573-0580	**Conserver**	$129.95	Combination power strip/surge suppressor/fan and monitor platform	511
	OctoRam	1MB, $399; 2MB, $699	Memory-expansion board providing up to 8 megabytes of RAM	512
	SuperSonic	$59.95	Stereo sound and amplifier board	513

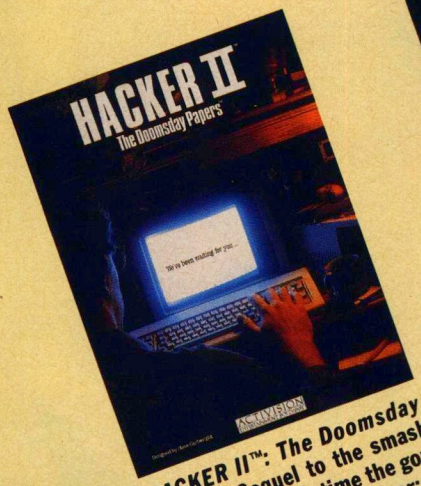
This table contains a sampling of available products, as well as some still under development, and the information herein is based on manufacturers' claims. For further information on most items in this table, please circle the corresponding Reader Service Number on the reader-service card in this issue.

COMPANY	PRODUCT	PRICE	DESCRIPTION	READER SERVICE NUMBER
Orange Micro, Inc. 1400 North Lakeview Avenue Anaheim, CA 92807 (714) 779-2772	**JuiceBox**	$119	Power strip/surge suppressor for IIGS and two peripherals, with built-in fan	514
	ProGrappler	$129	Menu-driven parallel printer board. Prints super-hi res screens from IIGS	515
	RamPack 4GS	$259	512K of memory expansion, expandable to 4 megabytes	516
Peak Systems, Inc. 1120 Capital Texas Highway Building 2, Suite 300 Austin, TX 78746 (512) 329-1020	**PLUS20 (30, 45, 65)**	20, $1095; 30, $1395; 45, $1895; 65, $2495	20-, 30-, 45- or 65-megabyte SCSI hard-disk drive	517
	PLUS20T	$895	SCSI tape backup	518
	SIERRA 2040	$2495	20-megabyte SCSI hard-disk drive and 40-megabyte tape backup	519
	SIERRA 3040	$2695	30-megabyte SCSI hard-disk drive and 40-megabyte tape backup	520
ProAPP, Inc. 1475 South Bascom Avenue Suite 101 Campbell, CA 95008 (408) 559-3552	**ProAPP 10, ProAPP 20, ProAPP 40S**	10, $795; 20, $995; 40, $1995	10-, 20- and 40-megabyte hard-disk drives that connect with either the disk port or SCSI interface	521
Street Electronics Corporation 1140 Mark Avenue Carpenteria, CA 93013 (805) 684-4593	**Echo IIb**	$129.95	Speech synthesizer, with external volume control and headphone jack—can be used instead of IIGS internal speaker	522
Thirdware Computer Products 4747 NW 72 Avenue Miami, FL 33166 (305) 592-7522	**FingerPrint Key**	$200	Add-on board that allows users to create macros—includes RS-232 connector into which other devices can be plugged	523
Thunderware, Inc. 21 Orinda Way Orinda, CA 94563 (415) 254-6581	**ThunderScan for the Apple II family**	Call co. for price	Device that scans images into the computer from the printer	524

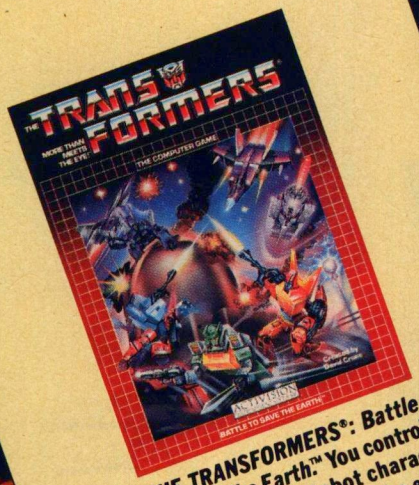
SOFTWARE

Activision, Inc. 2350 Bayshore Frontage Road Mountain View, CA 94043 (415) 960-6044	**Paintworks Plus**	$79.95	MacPaint-like drawing program	525
	Writer's Choice *elite*	$99.95	Word-processing software with Macintosh-like features	526
	Music Studio	$79.95	Music-composition and -education software	527
	Paper Models: The Christmas Kit	$29.95	Software for making Christmas ornaments and decorations	528
A-Squared Systems 10 Skyway Oakland, CA 94619 (415) 633-0703	**A-LIVE!**	Call co. for price	Plug-in card that captures real-time or still video images	529
Addison-Wesley Publishing Company 2725 Sand Hill Road Menlo Park, CA 94025 (415)•854-0300	**Information Laboratory**	$60	Database of science facts, to be used as research tool for students	530
Addison-Wesley Publishing Company Route 128 Reading, MA 01867 (617) 944-3700	**Puppy Love**	$19.95	Educational/entertainment software featuring a programmable on-screen puppy	531
Baudville, Inc. 1001 Medical Park Drive S.E. Grand Rapids, MI 49506 (616) 957-3036	**816/Paint**	$75	MacPaint-like program that runs in all four graphics modes	532
Brøderbund Software, Inc. 17 Paul Drive San Rafael, CA 94903 (415) 479-1700	**Drawing Table**	$89.95	MacDraw-like structured drawing program—supports LaserWriter and color printing on ImageWriter II	533
	Fantavision	$59.95	Special-effects/animation generator that can incorporate sound	534
	Newsmaker	$89.95	Desktop-publishing program with color drawing—imports text files from AppleWorks and Bank Street Writer	535
	The Print Shop	$69.95	Menu-driven color-graphics editor, for creating cards, banners, letterheads, signs	536
Chancery Software 1120 Hamilton Street, Suite 200 Vancouver, B.C., Canada V6B 2S2 (604) 685-2041	**CSL Marks**	Individual teacher license, $98; school site license, $300	Gradebook program for K–12 teachers that uses a spreadsheet format	537

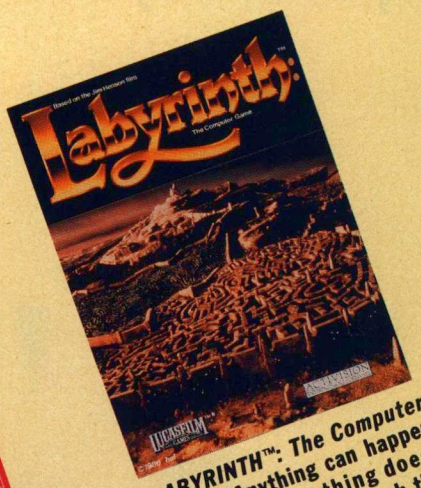
SIX GREAT NAMES IN COMPUTER GAMES



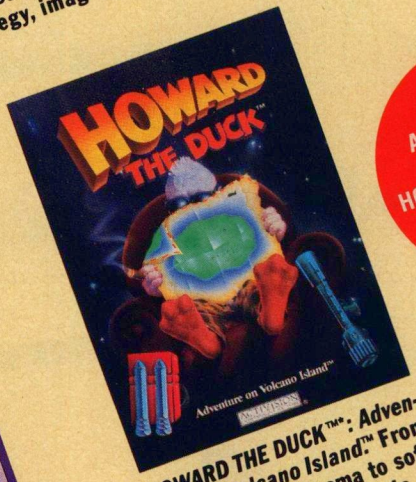
HACKER II™: The Doomsday Papers.™ Sequel to the smash hit, Hacker.™ This time the government needs a little favor; as a computer wizard you must hack your way through Siberian hazards in a maximum security complex.



THE TRANSFORMERS®: Battle To Save The Earth.™ You control your favorite Autobot characters in a battle against the evil energy-stealing Decepticons in this non-stop action adventure of strategy, imagination and skill.

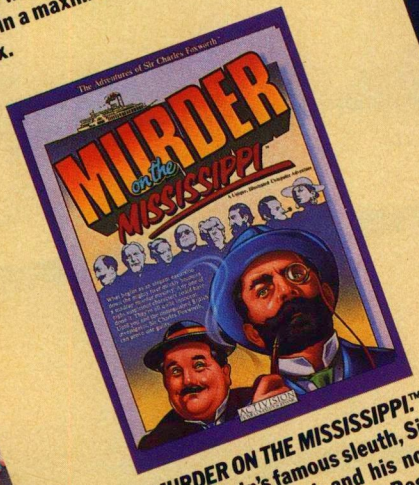


LABYRINTH™: The Computer Game.™ Anything can happen here and everything does! Puzzle your way through this maze of graphic madness, from the Wall of Hands to the Wise Man's Garden. Based on the movie but...expect the unexpected.

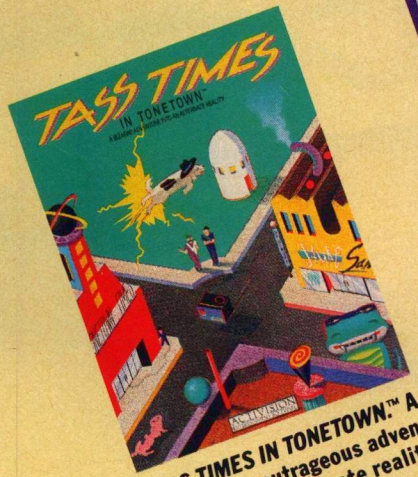


HOWARD THE DUCK™: Adventure on Volcano Island.™ From comic book to cinema to software! Volcano Island is no resort, but then Howard is no ordinary duck. Only quack-fu, quick wits, and you can keep Howard from becoming one plucked duck.

Ask your retailer about our HOT HOLIDAY OFFERS worth $245.



MURDER ON THE MISSISSIPPI.™ Join Britain's famous sleuth, Sir Charles Foxworth and his not-so-faithful manservant Regis, in this dangerously entertaining 'whodunit' on board the Delta Queen. Solve the mystery and you may win your own Riverboat trip.



TASS TIMES IN TONETOWN.™ A fast paced, outrageous adventure into an alternate reality where the top tune is Tass by the Daglets, the hot spot is Fast Freddies and everyone is too tass for words.

For most leading computer systems. Available this fall from ...

ACTIVISION
ENTERTAINMENT SOFTWARE®

CIRCLE 176 ON READER SERVICE CARD

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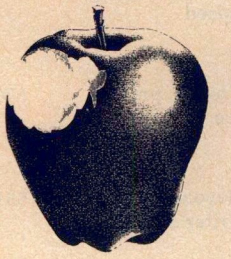

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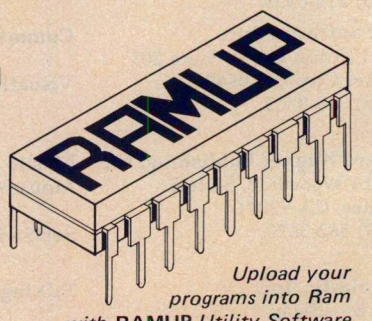

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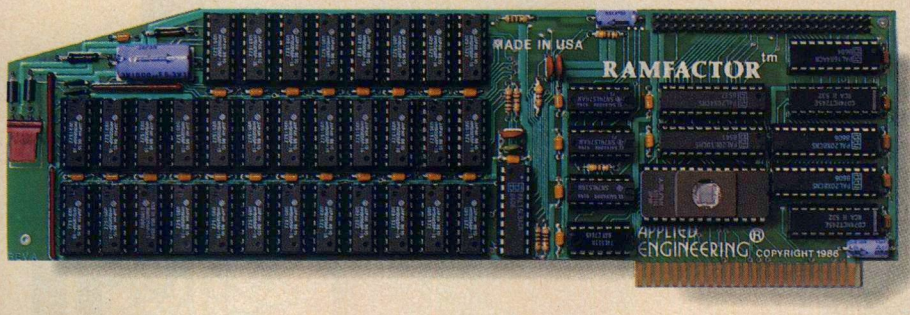

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THE APPLE IIGS VS. THE COMPETITION

APPLE IIGS *BY STEVE ROSENTHAL*

HOW WELL DOES THE NEW MACHINE STACK UP?

The new Apple IIGS is almost like a candidate for public office with a famous last name—the name and organization behind it guarantee a certain level of attention, but in the end the machine itself will have to compete on its own merits.

And compete is what it will have to do. Apple's newest machine joins several other quite respectable desktop computers already looking for favor in the school and advanced home markets. Along with Apple's own Macintosh, there's Commodore's Amiga, Atari's ST series, and PC-compatibles from companies such as Tandy (Radio Shack).

Each machine, of course, has its particular strengths and weaknesses (see the chart that accompanies this article) and will appeal more to certain buyers than to others. For the IIGS to survive and prosper, however, it will have to please enough of the people enough of the time.

The biggest advantage that the IIGS has going for it, naturally, *is* that it is an Apple II. Being a member of an already successful line of computers gives the nascent IIGS a base of software, an established dealer network, a known and stable support organization, and a community of users and developers who already like working with this series of machines.

In comparison, the Amiga and the Atari ST both represent sharp departures from their producers' previous offerings, and even the Macintosh was originally created outside of the existing Apple organization. As a result, those machines all took quite a while to define their markets and accumulate software, and all have suffered from several zigzags in their marketing.

For personal-computer users, stability is important not only because it protects our investment and ensures that we can find parts and repair, but also because it attracts software developers. The more stable a computer appears to be, the more willing developers will be to spend the time and effort to create powerful and nifty software for it. The IIGS and its producer, developers know, are not likely to vanish in the immediate future.

The II and the Mac

The second big advantage the IIGS provides is that it blends what Apple has learned from the Apple II series with its experience with the Macintosh. Like the other II-series computers (other than the IIc), it is an open-ended, expandable machine. Like the Mac, it has a user-oriented pictorial interface.

Actually, both the lessons of the slot-oriented Apple II, II Plus, and IIe and the comprehensive design of the IIc affected the design of the new machine. The seven main slots on the IIGS accept ordinary II-series boards. The provision of that kind of backward hardware compatibility certainly is a welcome approach.

From the IIc side of the family, the IIGS includes two built-in serial ports and a new disk-drive interface. Both can serve as alternatives to cards that provide those functions, freeing up slots for other functions and bringing the cost of the basic system down. You can't use the new built-in serial ports with unmodified existing communications programs, though, because the IIGS uses a serial controller chip that you'll find in the Macintosh but that's new to the Apple II.

From the Macintosh, the IIGS inherits a software approach that includes the obvious mouse-and-windows user interface, plus an internal toolbox that other programs can call on to provide a user interface similar to that of the Macintosh. The presence of the toolbox will serve as a strong incentive for developers to provide their programs with a consistent look and feel, which in turn will make it easier for users to learn different programs.

The Mac design is also where the IIGS gets its serial chip. Apple brought the Zilog SCC chip of the Mac over to the new machine because that chip allows the IIGS to work with AppleTalk. A IIGS, just like a Macintosh, needs only some inexpensive software, cabling, and a

PHOTOGRAPHY BY CARTER DOW

junction box in order to link up with the LaserWriter and other AppleTalk-equipped computers and peripherals.

Personal computers from other companies have also learned from the success of prior Apple machines. The IBM PC probably owes its slotted design to the Apple II, and much of the original PC software was based on prior packages for Apple machines.

The visual style of the Macintosh has also influenced competing machines. The Amiga has its Intuition visual user interface, the Atari and some PC-compatibles have GEM, and programs for dozens of other machines use a mouse-and-windows approach. Even though Apple didn't invent the mouse-and-windows method but picked it up from the Xerox Star computer, most personal computers that use this approach seem to owe more to the Mac than they do to any other prior machine.

Chip Controversy

The choice of processor chip of the IIGS may prove to be controversial. The 65C816 chip, with its combination of virtually perfect emulation of the 8-bit 6502 processor of previous Apple II computers and a new 16-bit mode, does provide several advantages over the 6502, but some developers wish that Apple had taken a slightly different approach.

On the plus side, having the 6502 mode and the electrical similarity to the 6502 even in the 16-bit mode is what made it practical for Apple to design a new, more powerful machine that also ran previous software and worked with existing hardware.

The 65C816 can also run 6502 code at a faster rate than the 6502 can—in the IIGS about 2.5 times as fast as an Apple IIc or IIe can, in fact. So even programs that have not been rewritten will show a performance increase. That factor is important mainly for the prior generation of software, however, since most developers of school and home software that are preparing new products for the IIGS say they'll be taking advantage of the 16-bit mode.

The new chip does indeed address much more memory than does the 6502 (up to eight megabytes on the IIGS), which facilitates development of more powerful software. Paradoxically, it also enables programmers to write software that is

OTHER COMPANIES HAVE LEARNED FROM APPLE'S SUCCESSES.

easier to use—the more convenient the software the more complex the program code needs to be.

Some programmers (and the 65C816's designers) also claim that in the 16-bit mode this chip is particularly fast and efficient compared to other chips, but programmers are notorious for their highly polarized and inexplicable devotion to their own personal choice of chips. The chip does perform certain operations in fewer cycles than either the 6502 or even the 68000 on the Macintosh, Atari, and Amiga do, but other operations run much more slowly than analogous ones on other advanced chips.

The 65C816 is a new chip, which means a potential for bugs or at least unexpected effects in certain applications. New chips always bring a mixture of increased power and increased uncertainty.

Because the 65C816 is a new chip, programmers have needed to specially create all the software-development tools that they need for writing software for the Apple IIGS. Although Apple generally wins praise from developers for the overall quality of its support, the company took longer than predicted to produce development tools for the IIGS, so third-party software developers had to start with minimal aids or create their own.

Along with the organizational delays, programmers also had to add the extra mental-preparation time for using a new chip. Programmers who were familiar with the 6502 and the 68000 had to learn a new chip architecture, a new way of thinking, and a new set of chip strengths and weaknesses. The lack of early availability of any high-level language exacerbated this problem.

Even for assembly-language programmers, who were able to adapt existing routines fairly quickly, using a new chip meant that they couldn't simply recycle stock routines developed for other machines. The 68000-based Atari and Amiga, in contrast, have often benefited from existing software because developers for those machines could reuse routines for the 68000 chip that originally were written for the Macintosh. Likewise, PC-compatibles for the home and school markets can draw on a legion of tools created for business applications.

Enhancing the Video

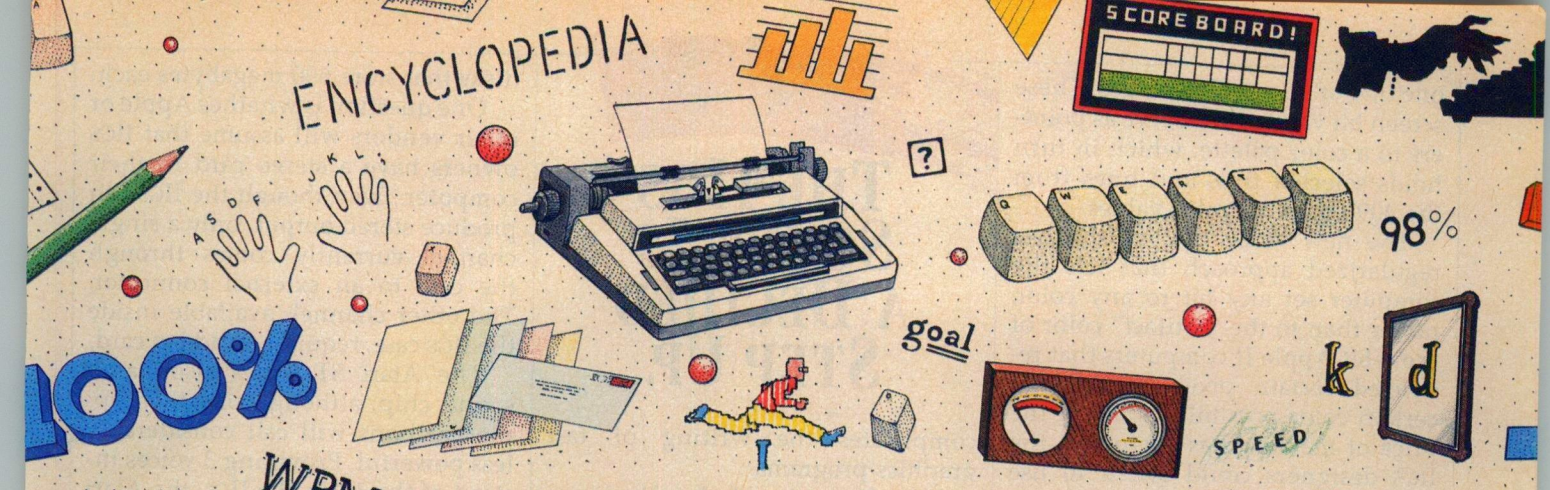
With the video capability of the new machine, on the other hand, Apple has struck a path closer to the standard practice of the industry. The IIGS offers a maximum resolution of 640 horizontal by 200 vertical pixels, with up to 16 colors available on each line.

A 640 × 200 color screen brings the Apple up to the capabilities of the Atari, Amiga (the Amiga also has a 640 × 400 color mode, but that mode is rarely used because it requires a very expensive monitor with special long-persistence phosphors), and the stock PC with a Color Graphics Adapter. For text, the 640 × 200 screen allows a full 25 lines of 80 characters, based on an 8 × 8-character cell.

The use of a 640 × 200 screen also hints at Apple's plans for flat screens. Already, 640 × 200 flat-panel displays are available from other manufacturers. Apple is known to be interested in flat-screen technology for the Mac and is also committed to greater sharing of peripherals across its product lines, so a flat screen for the Mac might also work with the II series. An even higher resolution might work best for the Mac, since it already offers a vertical resolution of more than 200 lines. A 640 × 400 screen could serve both machines well, however.

The color palette on the new IIGS extends to 4096 possibilities (all the combinations of 16 levels of 3 primary colors), which puts it at the top end of the range for machines in this class—the Atari ST has 512, the Amiga 4096, and the stock PC or compatible 16. As with the ST and the Amiga, the IIGS can access only a limited number of those colors at a time.

In the IIGS's new video modes, each pixel is represented by 2 to 4 bits of memory that give each dot



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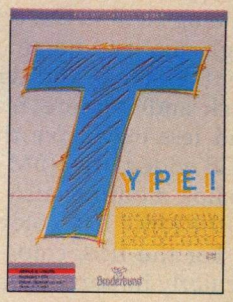

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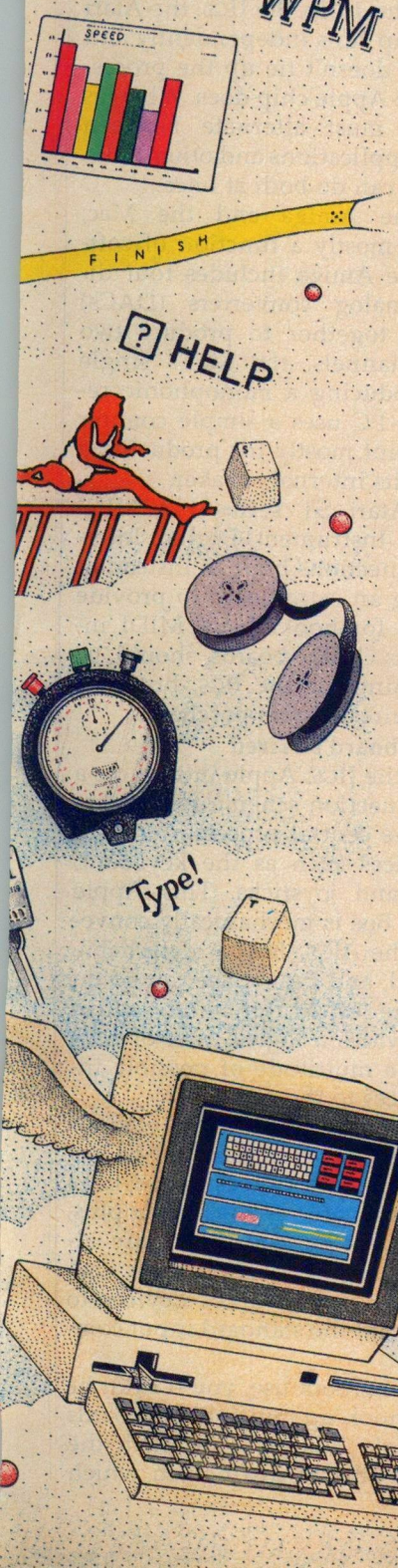

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one of 4 or 16 possible values. These screen bit values then serve as pointers to a color palette, which in turn holds selected tints and hues from the 4096 possible color values.

The new video design is also a regularized approach that lets the computer set any bit to any color, rather than to the "artifact" color of the 8-bit Apple II computers that restricted certain pixel positions to certain color possibilities. Since the price of memory has decreased, the IIGS designers could afford to use several bits of memory for every pixel position. That extra memory means a lot less effort on the programming end to get color right and a lot better color on the viewing end because the quality of the video image isn't limited by color-placement idiosyncrasies.

Comparing the IIGS's video to that of other machines, we see that the Atari likewise has 4 colors per line available at 640 × 400, with 16 similarly available at 320 × 200. The Amiga can give you a full 16 colors on each 640 × 200 line and can go to 32 at 320 × 200. IBM PCs and compatibles with stock video can produce only one color without dropping down in resolution.

The IIGS produces an analog video signal, rather than digital output. Analog RGB is the type you find in high-quality home video-component systems and videotape playback and is more readily available and less expensive than the digital RGB video the IBM PC uses. The analog monitors also respond better to the large IIGS color range.

For the IIGS, color fidelity is particularly important because of its anticipated role as an educational machine. Although simple, bright colors may be quite acceptable for action games or word-oriented productivity tools, more realistic color and images can be central to the effective presentation of many types of tutorial material.

On the less sparkling side of the ledger, the IIGS lacks some video features that game writers and players would probably have asked for. As with the prior designs from Apple, the IIGS video is purely bit-mapped memory. It lacks special graphics chips and coprocessors. The CPU chip itself has to do all the intelligent video work, which is particularly difficult for a chip that's running at only 1 or 2.5 MHz and

THE IIGS SOUND IS A DECIDED STEP UP.

complicates the writing of fast graphics programs.

The IIGS also lacks hardware dedicated to writing "sprites" and "playfields," which can simplify the programming of some types of games. In contrast, the Amiga, which specializes in on-screen graphics, has dual playfields and eight hardware sprites.

Sound to Shout About

Although the color-output capability of the IIGS is good but hardly unique, the sound is a decided step up from what other popular machines currently provide. The IIGS includes a fairly complete music-synthesizer chip from Ensoniq that goes far beyond the minimal audio output of prior Apple products.

The Ensoniq sound chip brings to the IIGS 15 separate voices of sound, each of which you can independently control or blend together. Each voice is controlled by two oscillators, so you can vary both volume and pitch.

That enhanced sound capability lets you add movie-quality music to adventure games or a full melodic range to a theme song. It can also furnish realistic sound for educational applications.

Initially, we'll see mostly snippets of these complex sounds in IIGS programs, because sound still takes up a good deal of memory. Even though the Ensoniq chip rates its own 64K of dedicated memory in the IIGS design, it can run through as much as 10K of memory a second—a standard IIGS with 265K of memory won't be much for lengthy performances.

You can, of course, load a IIGS with up to eight megabytes of memory, which gives you more than a minute of high-quality audio and even more if you compress the data before you store it in memory. I suspect, though, that Apple is also looking forward to better ways to store sounds, especially CD-ROM optical disks that store 600 megabytes each.

One question is whether Apple or other vendors will assume that IIGS owners have a stereo card in their computer. Even though the IIGS can produce stereo output, only a single channel currently comes through the case to an external connector. The other channel, available inside the IIGS case, requires an added card.

The Atari ST series also has a sound chip, although one that Apple partisans will call considerably less powerful. Providing 3 voices instead of the 15 on the IIGS, the Atari sound chip runs independently and therefore doesn't tie up the processor, as the Apple chip does. Whereas the IIGS must alternate between musical applications and other tasks, the Atari can do both at once.

On the Amiga and the Mac, sound is mostly a function of software. The Amiga includes four digital-to-analog converters (DACs) that run together to produce two stereo channels, the Mac's single DAC producing a monophonic result. The PC uses a simple counter chip, meant mostly for producing a beep on its internal speaker.

The Atari ST series has MIDI (Musical Instrument Digital Interface) connections built in instead of requiring an extra board to provide this link for hooking up MIDI instruments. MIDI boards should be forthcoming for the IIGS, but they will require an extra purchase.

The Keyboard's Wired

With the IIGS, Apple introduces a new connection scheme for use between the central processor and input devices such as the keyboard, mouse, and joysticks. This Apple Desktop Bus is mechanically convenient—the IIGS has a detachable keyboard, and the mouse can go on either the left or right side—and it also provides a logical way of connecting a multitude of possible input devices to the computer.

This scheme creates the obvious advantage of configurability. Just about everyone agrees these days that a detachable keyboard is a plus, and third-party developers are already working on alternative keyboards, mice, and other devices to supplement the standard input complement.

For classroom use, you'll even be able to hook up multiple keyboards to a single IIGS machine, with the software able to distinguish which

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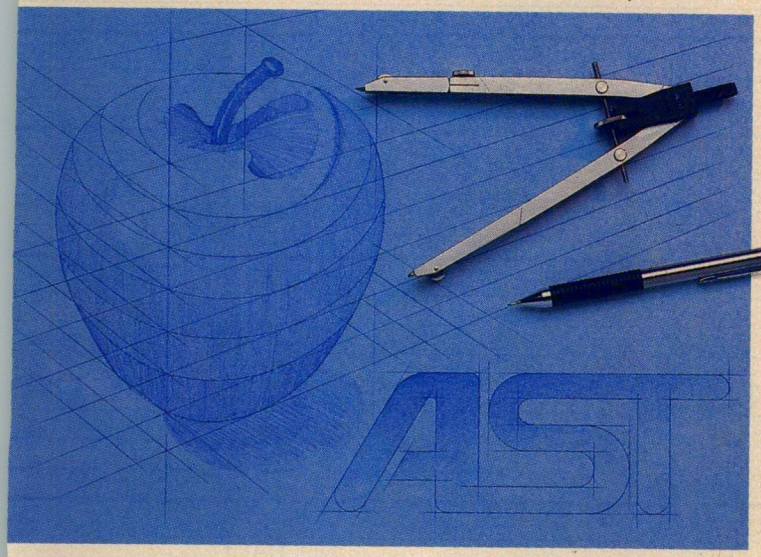

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For a complete layout on AST's Apple IIGS designs, contact your nearest AST-authorized Apple dealer, or fill out the coupon below and send it to the AST Apple Products Group: AST Research, Inc., 2121 Alton Avenue, Irvine, California 92714-4992. **(714) 553-0340**. BBS: (714) 660-9175. FAX: (714) 660-8063.

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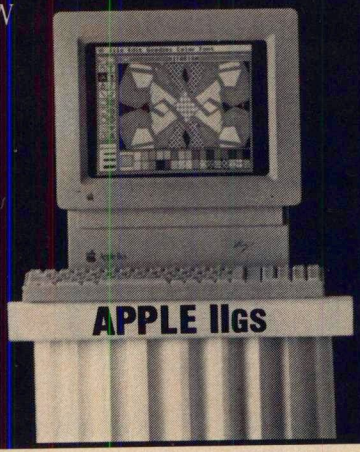
BY STEVE ROSENTHAL AND CHIP CARMAN

How The Competition Stacks Up



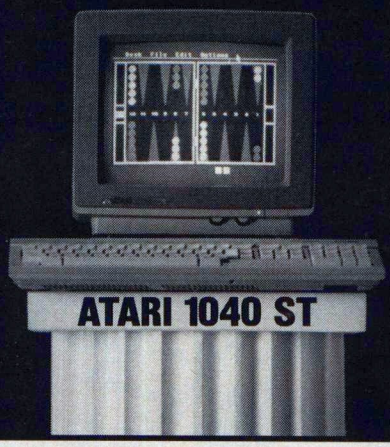
	APPLE IIgs	MACINTOSH PLUS
EASE OF USE	VERY GOOD	VERY GOOD
SYSTEM INTERFACE	MOUSE AND WINDOWS	MOUSE AND WINDOWS
TOOLBOX FOR PROGRAMS	YES	YES
HARDWARE SETUP	EASY–FAIR	EASY–FAIR
NUMBER OF AVAILABLE PROGRAMS	LOW–VERY HIGH	HIGH
DESK ACCESSORIES	YES	YES
MULTITASKING	NO	NO
CONFIGURATION ABILITY	GOOD	FAIR
EXPANSION METHODS	SLOTS	NONE
DESKTOP SPACE	MODERATE	SMALL
PROCESSING POWER	FAIR	GOOD
PROCESSOR TYPE	65816 + SOUND	68000
CLOCK SPEED	1/2.5 MHz	7.83 MHz
MEMORY RESOURCES	FAIR	FAIR
STANDARD MEMORY	256K	1024K
MAXIMUM MEMORY	8 MEGABYTES	4 MEGABYTES
DISKETTE CAPACITY	800K	800K
VIDEO DISPLAY	GOOD	MODERATE
COLOR DISPLAY	640 × 200 PIXELS	—
COLORS PER LINE	16	1
COLORS PER PALETTE	4096	1
MONITOR TYPE	ANALOG	—
HARDWARE SPRITES	NO	NO
GRAPHICS CHIP	NO	NO
MONOCHROME	640 × 200 PIXELS	512 × 342 PIXELS
SOUND QUALITY	VERY GOOD	FAIR
SOUND CHIP	YES	NO, DAC*
MAXIMUM VOICES	15	4
STEREO OUTPUT	ADD-ON*	NO
MIDI INTERFACE	ADD-ON*	ADD-ON*
INPUT/OUTPUT CAPACITY	MODERATE	MODERATE
NUMBER OF KEYBOARD KEYS	80	78
DETACHED KEYBOARD	YES	YES
INPUT BUS	YES	NO
HARD-DISK PORT	ADD-ON*	VIA SCSI
MOUSE	YES	YES
SERIAL PORT	YES	YES
INPUT BUS	YES	NO
COST	MODERATE	HIGH

*DAC =
DIGITAL-TO-ANALOG CONVERTER

*DMA =
DIRECT MEMORY ACCESS

*ADD-ON =
OPTIONAL PERIPHERAL CARD

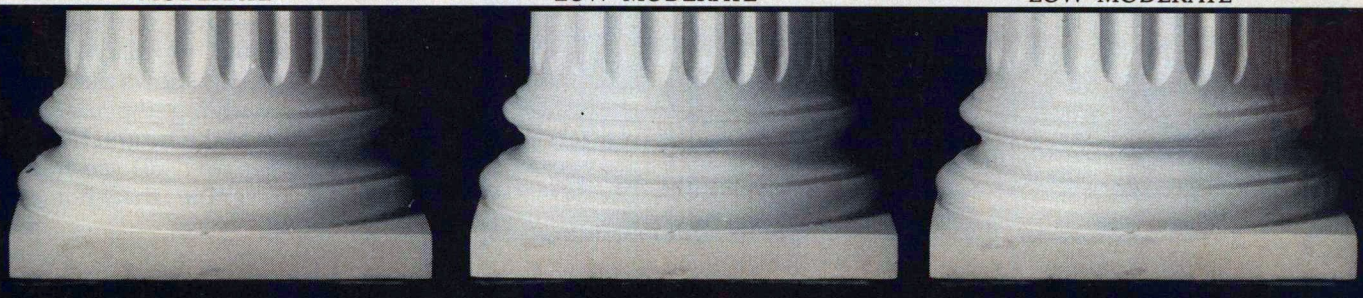
AMIGA



ATARI 1040 ST

PC & COMPATIBLES

AMIGA	ATARI 1040 ST	PC & COMPATIBLES
VERY GOOD	VERY GOOD	POOR–GOOD
MOUSE AND WINDOWS	MOUSE AND WINDOWS	COMMAND LINE
YES	YES	NO
FAIR	FAIR	POOR–FAIR
LOW–MODERATE	MODERATE	VERY HIGH
YES	YES	YES
YES	ADD-ON*	ADD-ON*
GOOD	FAIR	GOOD
SIDECARS	SIDECARS	SLOTS
MODERATE	LARGE	LARGE
GOOD	GOOD	FAIR
68000 + COPROCESSOR	68000	8088 + COPROCESSOR
7.18 MHz	8 MHz	4.77 MHz
FAIR	GOOD	POOR–GOOD
256K	1024K	256–640K
8.5 MEGABYTES	4 MEGABYTES+	1 MEGABYTE+
880K	720K	230K
GOOD–EXCELLENT	GOOD	FAIR–EXCELLENT
640 × 200 PIXELS	640 × 200 PIXELS	640 × 200 PIXELS
32	16	4
4096	512	4
ANALOG	ANALOG	DIGITAL
YES	NO	NO
YES	NO	ADD-ON*
640 × 200 PIXELS	640 × 400 PIXELS	720 × 350 PIXELS
GOOD	GOOD	POOR–EXCELLENT
NO, DAC*	YES	ADD-ON*
4	3	1
YES	NO	ADD-ON*
ADD-ON*	YES	ADD-ON*
MODERATE	MODERATE	FAIR–MODERATE
89	95	95
YES	NO	YES
NO	NO	NO
ADD-ON*	VIA DMA*	ADD-ON*
YES	YES	NO
YES	YES	YES/ADD-ON*
NO	NO	NO
MODERATE	LOW–MODERATE	LOW–MODERATE



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THE APPLE IIGS REPRESENTS ACCESSIBILITY.

keystroke came from which user. That, in turn, would allow the development of group-activity software, countering in part the criticism that computerized instruction shortchanges students in the learning of essential social skills.

Keyboard preferences among users are as personal and inexplicable as choice of language or CPU chip among developers. Many people will like the IIGS keyboard, and some will not. It sports 80 keys in an office-typewriter layout, plus a 10-key numeric pad.

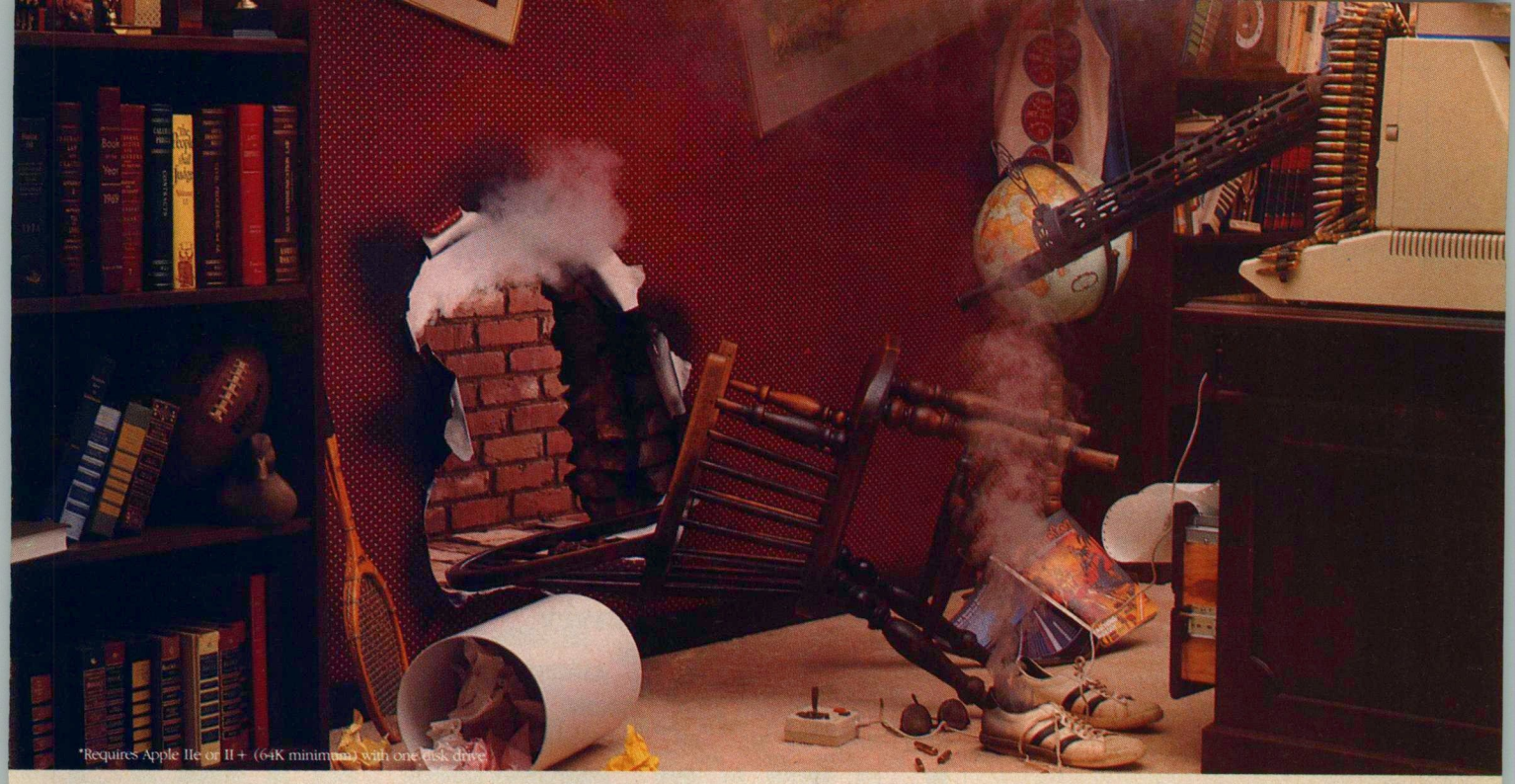
By contrast, none of the other competing machines have a general-purpose method of connecting input devices, although all accept a range of input devices. The Atari ST has a built-in (nondetachable) keyboard, and the PC and many compatibles need an extra adapter card to let you use joysticks or other supplementary input devices.

Taking the Sum

In the end, even the most fierce IIGS partisans at Apple will probably admit that in most ways this machine is neither a breakthrough product nor even in all ways the best of the current state of the art. On the other hand, it should do well for the reasons that the Apple II family has traditionally succeeded in the past.

The IIGS represents *accessibility* rather than new capability, and a continuation and extension of an enviable record in the past. By providing a smooth upgrade path from previous II-series machines, the IIGS rewards our loyalty and builds on what both we and Apple have learned up to now.

In the computer industry, those who ignore history don't stay around long enough to worry about repeating it. The IIGS shows that Apple has been studying the past as well as thinking of the future. In the months to come, we'll all see how the rest of us grade that homework. +



*Requires Apple IIe or II+ (64K minimum) with one disk drive.

Prepare to be blown away by your Apple.™

Phasor produces sound effects, music, and speech so striking, Applied Engineering feels you should be warned.

Have a weak heart? Don't read any further. And by all means, *don't go near* an Apple IIe or II+ equipped with the new Phasor sound synthesizer from Applied Engineering.

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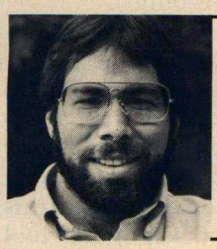

"I recommend Applied Engineering products wholeheartedly!"

Steve Wozniak, the creator of Apple Computer

What's best, the Phasor works with more off-the-shelf software than any other sound card you can buy. So now all your favorite games — like Skyfox™, Under Fire™, Willy Byte™, Tactical Armor Command™, Maze Craze™, Zaxxon™ and Ultima IV™ — can have shattering sound effects. Educational packages like Music Construction Set™, Guitar Master™ and Music Star™ are also dramatically enhanced.

The Phasor has *four times* the output power and *twice* the accuracy of any other sound card — but of course, you can easily turn down the volume if you need a rest. The Phasor is equipped with 12 simultaneous sound channels, 4 white noise generators, and a voice channel expandable to 2 voices. Programs written for other sound cards, including Mockingboard™, ALF music card™, Synphonix™ and the Super Music Synthesizer™, sound even better with the Phasor. And you can control speech, pitch, volume and more with simple commands.

The Phasor comes with its own easy-to-use software (ProDOS based), including 30 ready-to-run, non-copy protected songs and sound effects along with a Music Editor, Sound Effects Editor and Text to Speech program. And of course, it carries our no-hassle, five-year warranty.

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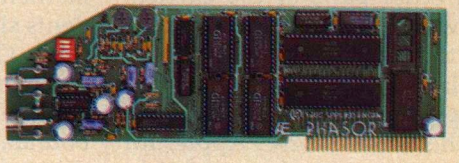

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BY DAVID D. THORNBURG

COMPUTERS AND CREATIVITY, PART I

The educational potential of combining art and mathematics

The educational application of personal computers generally involves either specialized programs that teach or test certain concepts, or "tool" programs such as word-processing software. Although these uses of computers are perfectly legitimate, one area I think deserves increasing emphasis is the use of computers for the development of creative expression.

Many of us have used graphics programs that let us draw pretty pictures on the display screen and then let us print them out. Classroom use of such products is often restricted to "free-time" activities or to illustration of themes or poems. In the latter case, the artwork is supplemental to the primary task, the creation of a written piece. We are at the point, however, where creative and artistic applications of computers can help bring art back into school curricula.

All human cultures have art—it is an essential part of our being. I believe that computers can and should be used to help us develop an appreciation for and an understanding of art as a creative process. Furthermore, I believe that we can integrate art with other parts of the curriculum in ways that benefit everyone, not just the "artistically inclined."

The Trojan Horse of Art

A popular phrase these days refers to the Trojan horse. Apple, for instance, presents desktop publishing as the Trojan horse that will carry the Mac into the mainstream of the Fortune 500 companies. In education, say some, LogoWriter is a word-processing program that will act as a Trojan horse to bring Logo into all classrooms.

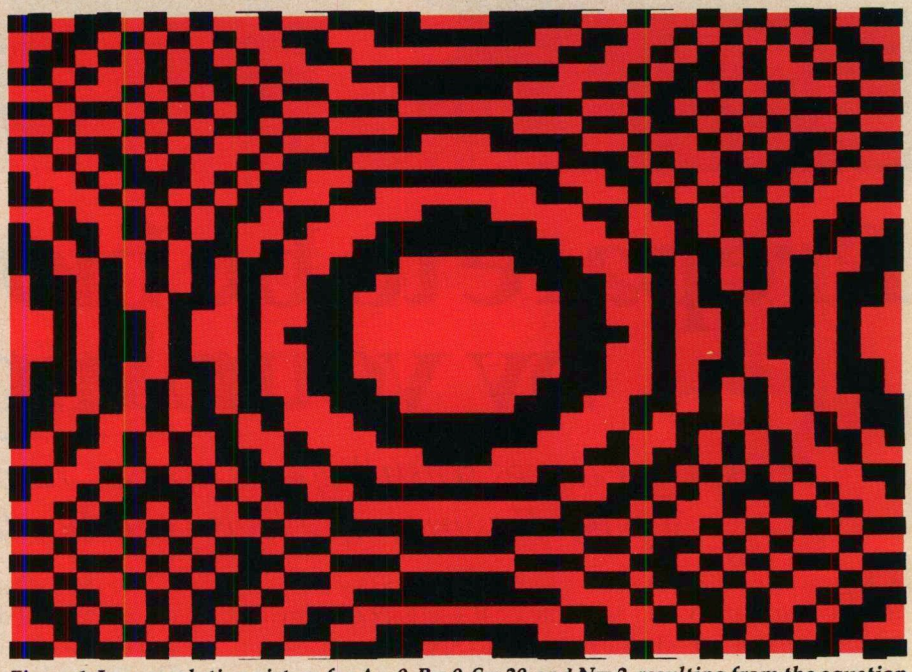

Figure 1: Low-resolution picture for A=0, B=0, S=20, and N=2, resulting from the equation x2 + y2

From my perspective, computer-based materials can serve as the Trojan horse that restores education in the fine arts to all our schools.

My reason for this belief is that computers allow the creation of complex and beautiful pictures through the use of fairly simple mathematical functions that students should be learning about anyway. Once high-quality graphics programs are in use (e.g., in the study of mathematics), crossing the boundary to the fine arts, where these same programs can be appreciated purely from an aesthetic or design perspective, is only a short step. More and more high-quality graphics products are becoming available for the Apple II series. Next month, I will describe two commercial packages (Creativity Unlimited from Sunburst Communications and Fantavision from Brøderbund).

This month, I want to share a simple program that any Apple II user can enjoy, a program you are free to type in and experiment with yourself. You may find yourself lost for hours exploring the rich wealth of patterns that can emerge from this program, a cross-disciplinary tool for exploring the mathematics of art as well as the art of mathematics.

Textile Designs

The cover story of the September 1986 issue of *Scientific American* was the "Computer Recreations" column, written by A. K. Dewdney. His topic that month was "wallpaper for

the mind," a description of a set of mathematical algorithms for creating lovely graphic images on computer displays. The first algorithm he described was developed by John E. Connett of the University of Minnesota. His patterns were generated from the following rule: Take the formula x2 + y2 and look at a grid of points on the screen. At each point (x,y), compute the formula, truncate it to an integer, and then place a dot at the point if the result is an even number. The simplicity of this rule hides the fact that it generates extremely complex and pretty results.

To explore this technique myself, I created some Applesoft BASIC programs that build patterns on the computer screen. (Yes, I actually write programs in Applesoft!) Here is the starting program:

```
10 PRINT "ENTER STARTING X VALUE";
20 INPUT A
30 PRINT "ENTER STARTING Y VALUE";
40 INPUT B
50 PRINT "ENTER FIELD SIZE";
60 INPUT S
70 PRINT "ENTER NUMBER OF COLORS (2-16)";
80 INPUT N
90 GR
100 FOR I = 1 TO 39
110 FOR J = 1 TO 39
120 X = A + (S * (I - 20) / 100)
130 Y = B + (S * (J - 20) / 100)
140 Z = X * X + Y * Y
150 Z = INT (Z)
160 COLOR = (Z - (N * INT (Z / N)))
170 PLOT I,J
180 NEXT J
190 NEXT I
200 END
```

You create different pictures by entering different values for the starting parameters. The program draws a picture of the region centered on the values of A and B. Entering new values for the field size can change the pattern drastically, as you will see when you start playing with it. Calculation of the mathematical function being explored is in line 140, and you can change the function to generate many different kinds of patterns.

Rather than

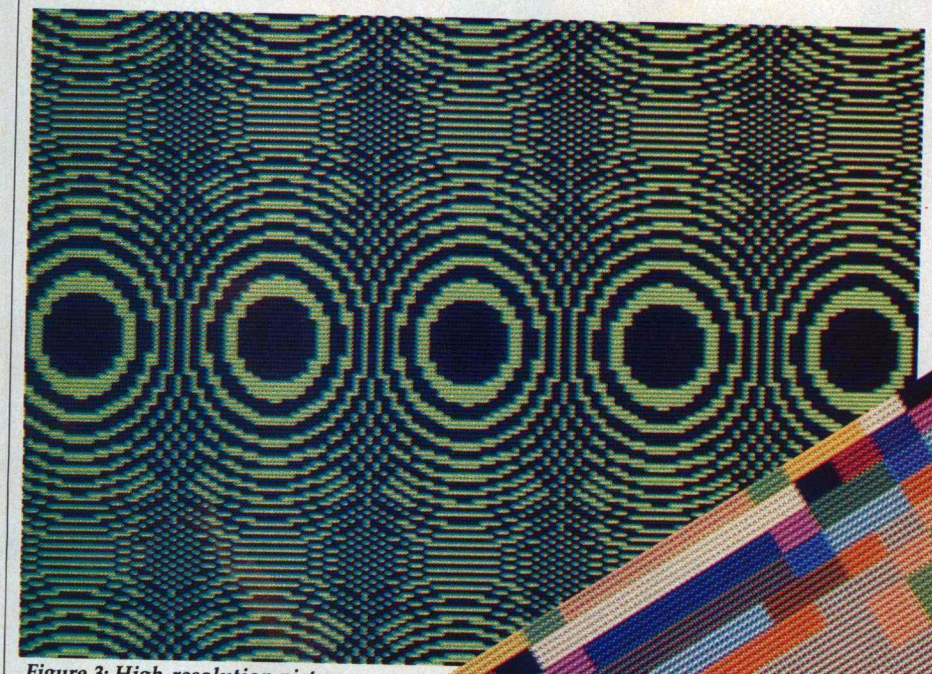

Figure 3: High-resolution picture for A=0, B=0, S=10, and N=2, resulting from the equation x2 + y2.

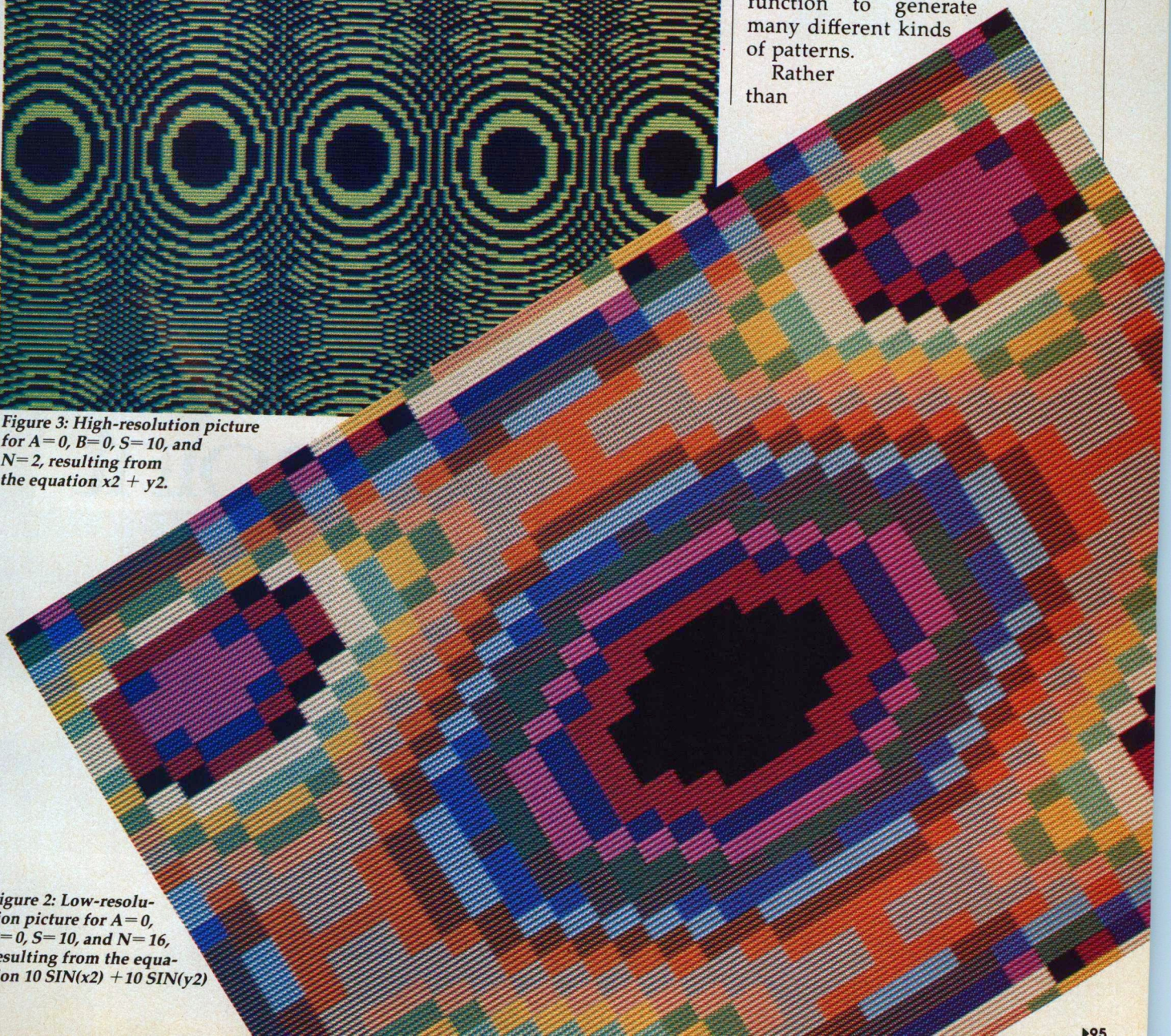

Figure 2: Low-resolution picture for A=0, B=0, S=10, and N=16, resulting from the equation 10 SIN(x2) +10 SIN(y2)

AppleWorks™

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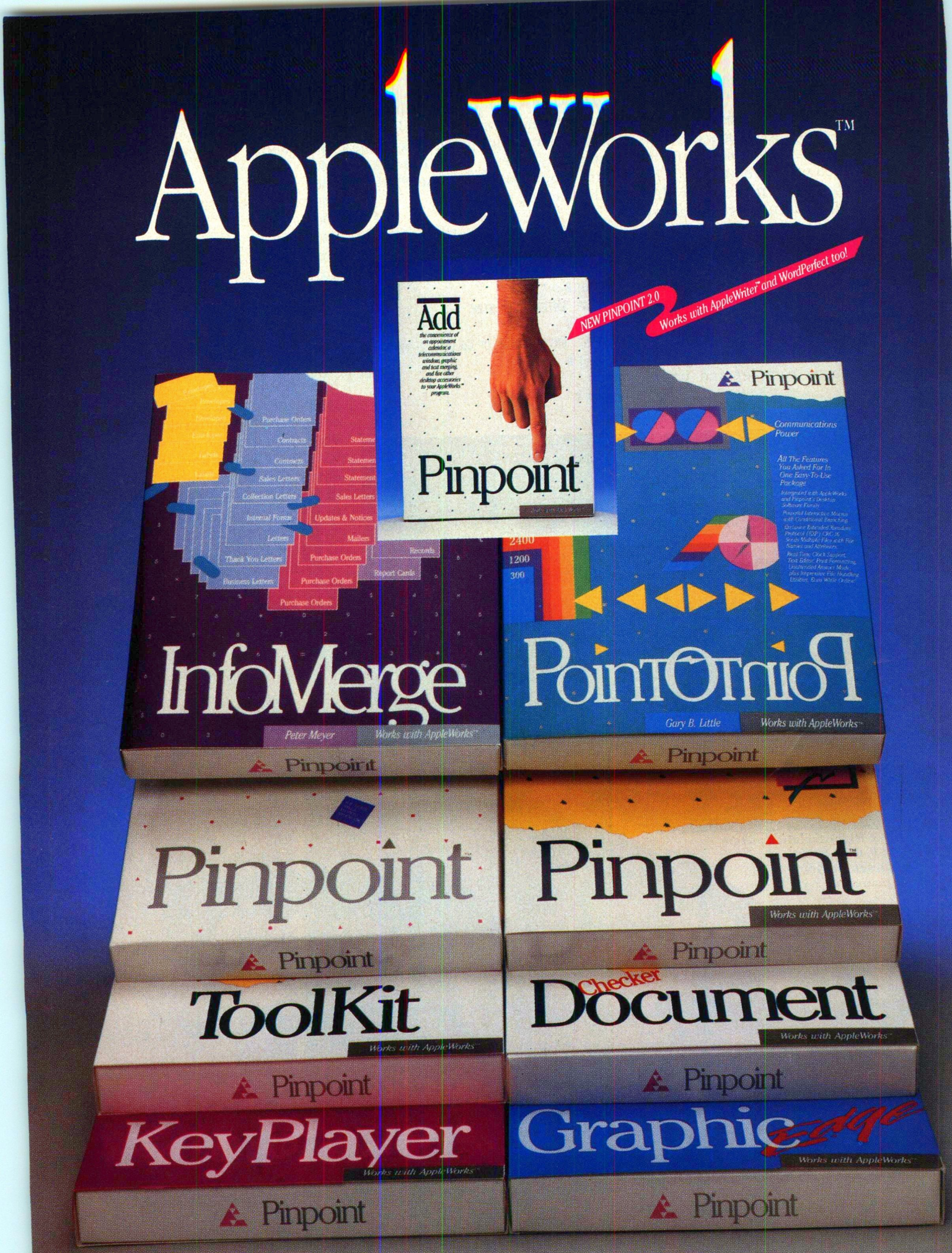

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Power Tools

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Picture this on your Apple IIc, IIe or new Apple IIGS.

By Steve Cochard

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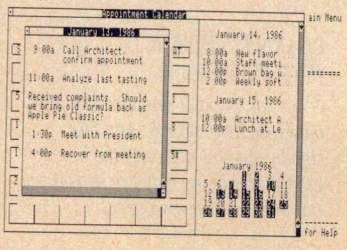

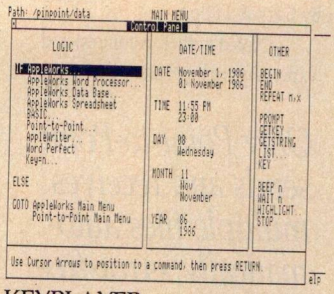

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KEY PLAYER
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Requires Apple IIGS, Apple IIc, Enhanced Apple IIe with 128K or Apple IIe with Pinpoint's Apple IIe Upgrade Kit and 128K; two Apple 5.25 drives, or an Apple 3.5 drive, hard disk or extended RAM card. Not copy protected. Contact Pinpoint Direct for a list of compatible hardware and software or a FREE CATALOG.

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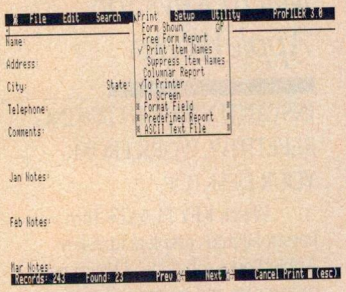

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By Gary B. Little

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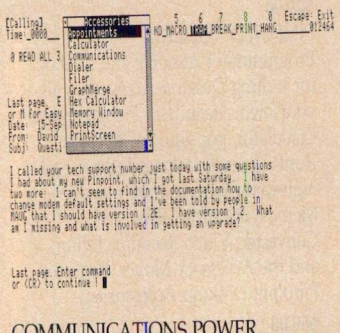

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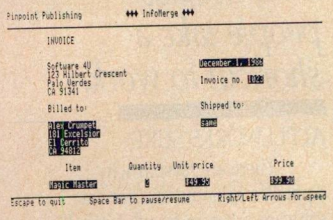
By Peter Meyer



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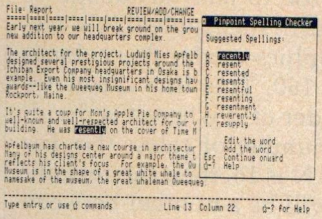

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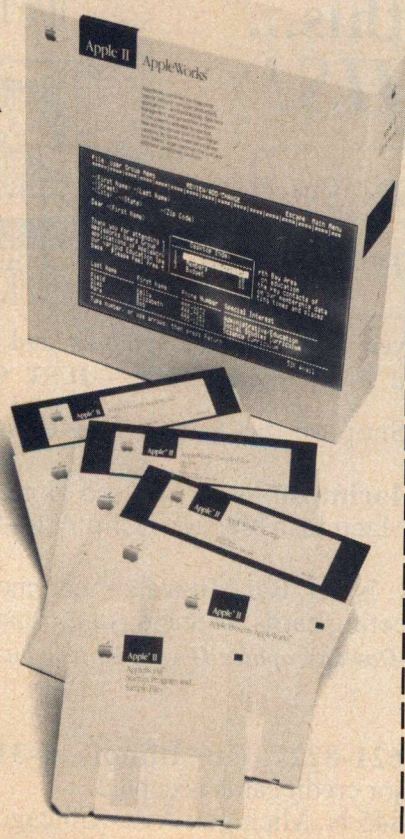

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restrict the picture to black and white, I chose to take advantage of the 16 colors in the Apple II low-resolution-graphics mode. The color is set in line 160. This line calculates the remainder of Z when it is divided by the number of colors (N). For example, if N is 16, then the remainder value will be a number between 0 and 15. Each of these numbers corresponds to a different color. Figure 1 shows the pattern that results when A=0, B=0, S=20, and N=2.

Different values of S result in patterns other than the interlocked circles. I have spent many hours creating pictures with this simple program, trying (in vain) to predict what I would get in advance.

Simple Changes

By making a few simple changes to the program, you can explore many other patterns or explore existing ones in greater detail. For example, if line 140 is replaced by

```
140 Z = 10 * SIN (X * X) + 10 * SIN (Y * Y)
```

the design in figure 2 appears for A=0, B=0, S=10, and N=16.

Colored patterns this program generates are particularly striking on the Apple IIGS with an RGB monitor. The patterns remind me of Madras prints on textiles.

The Hi-Res Alternative

Whereas the low-res screen provides a lot of colors, the hi-res screen provides more detail. The only changes you need to make to use this screen are the following:

```
90 HGR
100 FOR I = 1 TO 260
110 FOR J = 1 TO 150
120 X = A + (S * (I - 130) / 100)
130 Y = B + (S * (J - 75) / 100)
160 HCOLOR = (Z - (N * INT (Z / N)))
170 HPLOT I,J
```

You should also change line 70 to reduce your color choices from 16 to 4.

Figure 3 shows the kind of pattern you get with this program when A=0, B=0, S=10, and N=2.

Art While You Sleep

High-resolution patterns take a lot longer to calculate than low-resolution ones, so you may want to modify the program to generate and automatically save an entire collection of pictures that you can then load and look at after letting the computer work all night. Hi-res pictures are easy to save and reload

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from BASIC. For example, suppose you want to generate a set of pictures, each of which has the same starting points and colors but a different scale. In order to modify the high-resolution version of the program to generate ten pictures with values of S ranging from 10 to 100, delete lines 50 and 60 and add these lines of code:

```
85 FOR S = 10 TO 100 STEP 10
192 PRINT "BSAVE PICT";S; ",A$2000,L$2000"
194 NEXT S
```

Be sure your disk has 170 free blocks to hold your pictures!

When you run the program, it asks you for the starting positions and the number of colors you want. Then the computer starts generating and saving the pictures automatically. Depending on the function you choose for line 140, this process can take anywhere from several hours to a day.

Once the program is finished, you will see that your disk now has a lot of files named PICT10, PICT20, etc. To see any of these pictures, enter the following from your keyboard:

```
HGR
BLOAD PICT10,A$2000
```

The picture PICT10 will appear before your eyes in a few seconds.

Opportunities for Learning

Granted that the patterns this program creates are pretty to look at, but how are they to fit into an educational activity?

Let's explore this question from the perspective of a math teacher. Two major opportunities leap to mind for the use of this program.

The first has to do with modular arithmetic. The color at each point is determined by a modulo (remainder) calculation in line 160, which means that all points of the same color (on the low-resolution screen) have the same remainder value. Linkages of dots with the same color create contours.

Contours appear in other disciplines, such as cartography. This program thus provides educators with an opportunity to connect the concept of mathematical contours to altitude contours in geological maps, for instance.

A second opportunity for discovery is to play with different mathematical functions in line 140. You can use any generalized function of x and y. To generate interesting patterns, the function might need scaling to make sure it produces values large enough to allow plotting of several colors.

Artistic Exploration

A topic for exploration in the classroom is to try to decide ahead of time which kinds of functions are likely to be interesting and which are not.

By starting with low-resolution images, you can try ideas out in a few minutes. Several teams of students can spend a class period experimenting with different mathematical functions and then share their results with the entire class. This highly experimental approach to mathematical discovery is far more interesting than many other classroom activities and is also how real mathematicians work. In this manner, you can use the program as an artistic vehicle for the exploration of mathematics.

The same program can serve in an art class as a basis for creating textile

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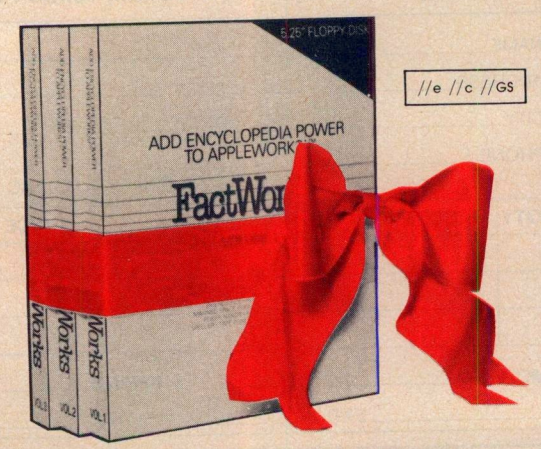

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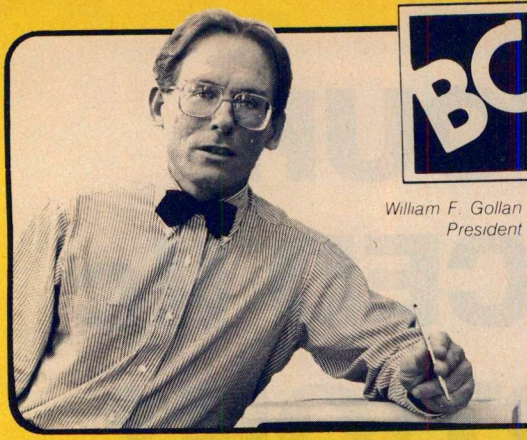

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Your Turn

I hope some of you start to play with this program. I encourage teachers to let their students work with it—not as a "reward" for doing other work but as a part of the instructional day.

I'd like to collect a library of interesting patterns based on this program. Send me your favorite functions (your replacements for line 140), along with the values of A, B, S, and N that you like, and let me know if you used the low- or high-resolution screen. I will accumulate your responses and publish some in this column in a few months. Creativity is a human function, but that doesn't mean we can't use computers to help us. ✚

David Thornburg is a contributing editor to this magazine, author of numerous books on computing, and an active developer of materials designed to unleash creativity in people from all disciplines. He welcomes mail from his readers and can be reached at Innovision, P.O. Box 1317, Los Altos, CA 94023-1317.

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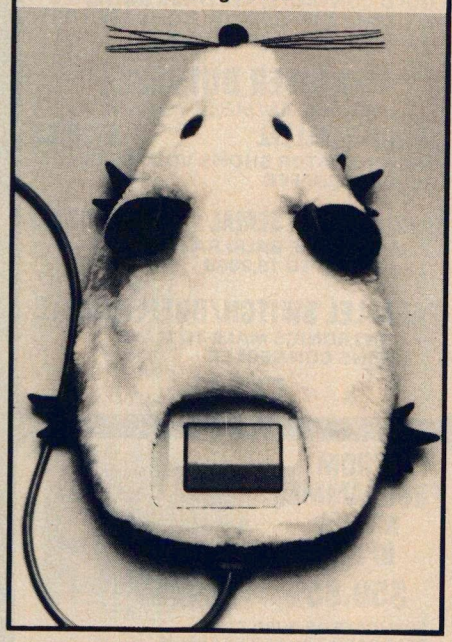

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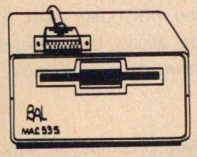

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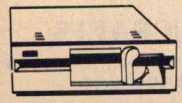

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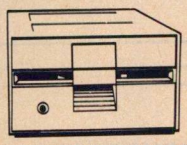

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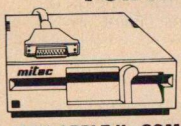

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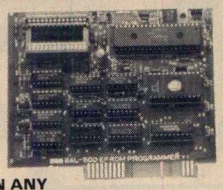

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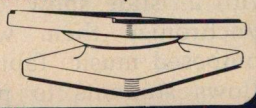

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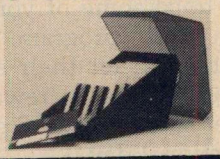

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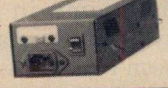

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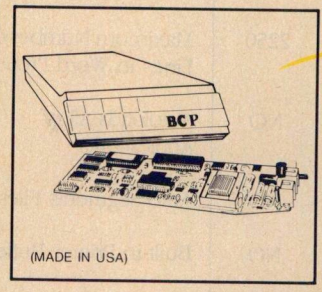

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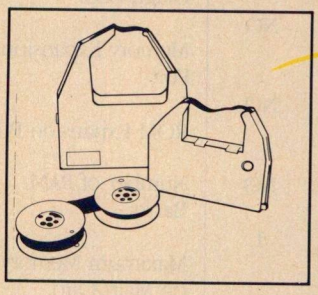

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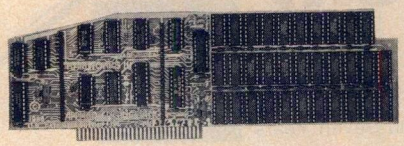
VISA

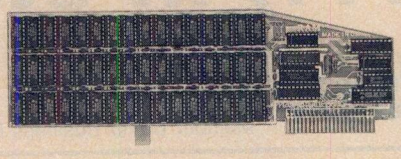
A Comparison Between the #1 Maker of Apple Memory Cards (Applied Engineering) and the #2 Maker (Apple Computer)

FOR THE IIe



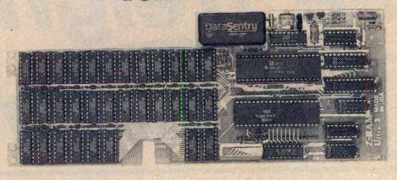
	RamWorks III®	Apple's™ Card
Maximum Desktop	3017K	1012K
Maximum Number of Records in Database	25,100	1350
Maximum Number of Lines in Word Processor	15,300	2250
Autoloads All of AppleWorks	YES	NO
Auto Segments Files	YES	NO
Built-in Printer Buffer	YES	NO
Compatible with All Versions of AppleWorks	YES	NO
Displays Time & Date on AppleWorks Screen	YES	NO
RGB Option	YES	NO
16 Bit Co-Processor Port	YES	NO
Memory Expansion Port	YES	NO
80 Columns Built-in	YES	NO
Maximum Total Functions	6	1
Software Standard	YES	YES
Made in	USA	Singapore
Warranty	5 years	90 days

FOR THE IIGS



	GSRAM™ GSRAM Plus™	Apple's™ Card
Maximum Desktop	8000K	1012K
Maximum Number of Records in Database	25,100	6000
Maximum Number of Lines in Word Processor	15,300	6000
Autoloads All of AppleWorks	YES	NO
Auto Segments Files	YES	NO
Built-in Printer Buffer	YES	NO
Displays Time & Date on AppleWorks Screen	YES	NO
Time and Date Macros	YES	NO
Built-in Hi-Res Diagnostics	YES	NO
Memory Expansion Port	YES	NO
ROM Expansion Port	YES	NO
Number of RAM Banks	6	4
Maximum Memory on Main Card	1.5 or 6 MEG	1 MEG
Software Standard	YES	YES
Made in	USA	Singapore
Warranty	5 years	90 days

FOR THE IIc



	Z-RAM Ultra™	Apple's™ Card
Compatible with All IIc's	YES	NO
Maximum Desktop	727K	1012K
Maximum Number of Records in Database	25,100	1350
Maximum Number of Lines in Word Processor	15,300	2250
Autoloads All of AppleWorks	YES	NO
Auto Segments Files	YES	NO
Built-in Printer Buffer	YES	NO
Compatible with All Versions of AppleWorks	YES	NO
Displays Time & Date on AppleWorks Screen	YES	NO
16 Bit Co-Processor Port	YES	NO
Built-in ProDos, DOS 3.3 Clock	YES 1	NO
Built-in CP/M Capability	YES 2	NO
Maximum Total Functions	5	1
Software Standard	YES	YES
Made in	USA	Singapore
Warranty	5 years	90 days

Apple makes good peripherals for their computers. Perhaps that's why they sell more monitors, printers, disk drives and other accessories for their computers than anyone else. Well, almost anyone else. You see, Applied Engineering is the only company to outsell Apple in the peripheral business. In fact, according to several independent studies we outsell them 2 to 1. Why? Are Apple's memory cards not up to par? No, actually they're just as good as their other peripherals, it's just that ours are a generation ahead.

One look at the chart above will tell you why most Apple owners choose Applied Engineering when they want to expand their Apple's performance.

You can find the number 1 memory cards for the Apple at over 2,000 Applied Engineering dealers worldwide. Call 214-241-6060 for the dealer nearest you or to place an order.

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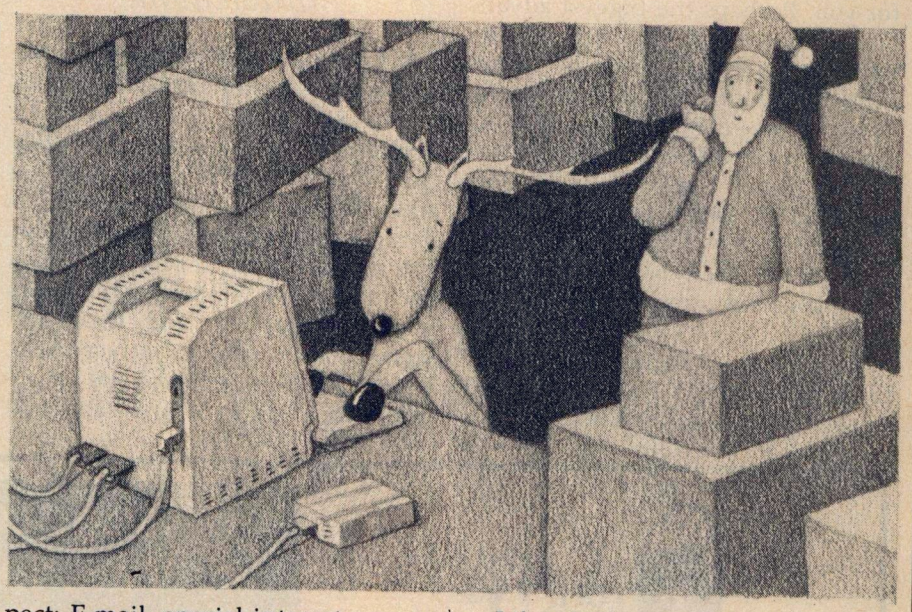
BY RUSS LOCKWOOD

THE SIGNALS OF THE SEASON—1986

A holiday gift, BBS wonders, and a New Year's resolution



As we log off of 1986 and look forward to the carrier signal of 1987, the telecommunications world grows ever larger and ever more competitive. Modem prices are falling, and new telecommunications programs such as CommWorks (PBI Software), Point-to-Point (Pinpoint Publishing), and others make connecting to an on-line service easier and faster. Fellow modem mavens already know what I mean, but for those of you who have yet to experience the on-line world, I can only ask, "What are you waiting for, Christmas?"

Meanwhile, back in Norwalk, Connecticut, the elves at the market-research firm International Resource Development (IRD) have released their "Electronic Mail Report," which provides a ten-year forecast for the electronic-mail market. IRD presents a rosy picture, claiming 1986 revenues of $340 million will increase fivefold to almost $2 billion by 1996. Among the other predictions: IBM will not offer an E-mail service (it does own a big chunk of MCI, of course); voice messaging systems will see significant growth; and more E-mail systems will interconnect.

A Gift from Mnematics Videotex

Mnematics Videotex is not a household name, but it does epitomize the small-company legend of building a following through technical prowess and innovation. Mnematics operates an on-line service with all the offerings you might expect: E-mail, special-interest groups (SIGs) covering a variety of topics, interactive on-line chatting, electronic shopping, multiplayer games, news, weather, and other consumer-oriented services.

Modem prices are falling, and new telecommunications programs make connecting to an on-line service easier and faster.

The service has been on-line since January 1983 and offers a good selection of SIGs—science, gardening, sports, literature, science fiction, movies, puzzles, cats, Apple II, and Macintosh—even though many of them are not as active as one would hope.

Likewise, you will not find a vast selection of games, multiplayer or otherwise, on Mnematics. The big draw right now is a multiplayer role-playing game called The Dulcimer Crystal, which seems like a takeoff on the *Star Wars* saga. After all, what else can you call a game that pits Princess Lexia Zenobia against the vile Emperor Darhtmal Veebner? Toss in Obeah rebels, "lazer" cannons, mutations, mysterious crystals, and Brigand shadow-fighters, and you get what I mean.

What really sets Mnematics apart, however, is its E-mail service. While CompuServe and MCI trumpet their achievement of sending messages between the two systems, Mnematics does a bit of one-upmanship. While logged onto Mnematics, you can send E-mail to fellow Mnematics subscribers, CompuServe subscribers, MCI Mail subscribers, and subscribers to The Source. If you're so inclined, you can add Telex subscribers to the list too. That covers

ILLUSTRATION BY PAUL YALOWITZ

just about everybody. In fact, Mnematics is so good that National Public Radio chose the company over The Source for its E-mail service.

Subscribers in England will especially like the tie-in through the IPSS (International Packet Switching Stream). This British version of Tymnet allows overseas subscribers to connect at the same price as domestic subscribers.

Mnematics admits that U.S. subscribers may not benefit from that arrangement as much as the Europeans, but if you have a hankering to order a British Rail Pass or peruse British databases, Mnematics may be for you. Perhaps the biggest advantage is the ability to chat on-line with someone in Britain—something I did one Sunday morning. The exchange of small talk and ideas can be an eye-opener.

The biggest weak spot is the documentation. The three-ring binder is nice, but the system information could have been better organized and presented more effectively and completely.

So what do these telecommunications capabilities cost? Exactly $39.95 to set up an account and $4.50 an hour (no minimum charges) through the Tymnet system.

The subtitle of this month's column mentions a holiday gift: Through December 31, 1986, any *A+* reader who circles the Mnematics reader-service number on the *A+* reader-service card at the back of this issue will receive an account absolutely free—repeat, absolutely free! This is a $39.95 value, and you *must* circle the reader-service number to receive the account. Of course, you must still pay for any time you spend on the system. Mnematics wants subscribers, and this offer seems a good way to attract them. For *A+* readers, it represents an opportunity to get in on an established on-line service. All in all, a Christmas present well worth receiving.

Mnematics Videotex epitomizes the legend of building a following through technical prowess and innovation.

BBS Entrées

Jonathan Gleich runs a 700-member, multiuser bulletin-board system (BBS) on an Apple with a 20-megabyte Corvus hard-disk drive. Started in 1983, Earthnews BBS allows up to 11 users to chat interactively at one time.

John Gallaugher runs a BBS for a northern New Jersey users' group on a Mac Plus with a 20-megabyte Dataframe hard-disk drive. If you're in the area on the third Tuesday evening of each month, drop by Richardson Hall, Room 106, at Montclair State College.

Santa's Saga Strikes Back

As 1986 drew to a close, Santa found that his distribution operation was falling behind as orders increased. Departmental communications took much too long. The far-flung offices were out of touch. Inertia plagued the operation.

So, he decided to computerize. Besides, it was the last year for the investment tax credit and sales-tax deductions.

He looked around for a committee to examine the available choices

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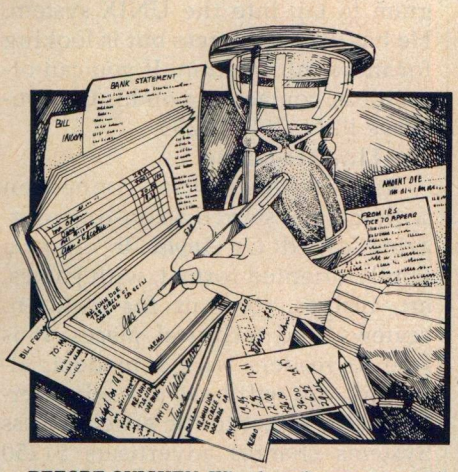
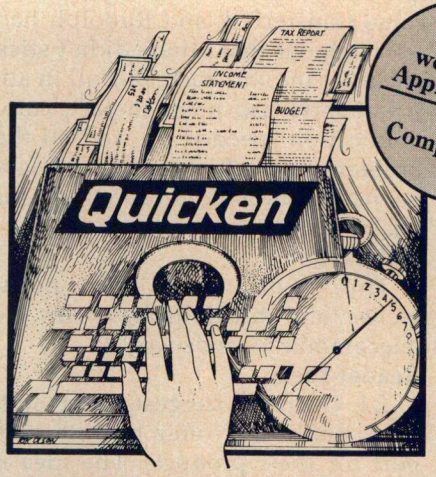


BEFORE QUICKEN: Who doesn't want to get rid of the hassles of paying bills, managing finances, and keeping records?



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—InfoWorld Review Board

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—Ken Landis, A+ Magazine

"Thanks to Quicken, I'm automating my personal checking account. I've never seen such an easy-to-use manual or software that's so simple to use."

—Martin Blumenthal, InCider Magazine

"Now there is a program that truly saves time when it comes to paying bills and keeping track of tax-deductible items, and that program is Quicken."

—Parents Magazine

"Extremely simple and fast."

—Esther Dyson, Release 1.0

If you write checks, you need Quicken®—the breakthrough software that automates financial management for business and home.

The breakthrough is Quicken's fully automatic design. Quicken is so automatic it remembers your recurring bills and pays them—all you do is sign the checks. Automatic macros cut laborious data entry down to two keystrokes. Quicken manages your checkbooks and even finds and fixes your mistakes. It tracks and totals your expenses by date, payee, and category.

Quicken is so completely automatic it remembers to save and backup your data, even if you forget!

And if you use AppleWorks, Quicken will automatically fill in your spreadsheets with your financial data!

Quicken does the paperwork for you. It's bill-paying time. Fire up Quicken and the screen looks just like a check. Your first bill is the bank loan, you press two keys and, zap, Quicken's macros write out the full check. Next, the American Express bill. It's a biggee. You're glad Quicken knows exactly how much cash you have. Macros write the check, letting you pick how much to pay. You slip paper checks in the printer. Don't bother positioning them, Quicken does that for you.* Sign the printed checks and slip them into Quicken's window envelopes ...you're done.

Recordkeeping? That's done for you. With each bill, Quicken filled out your records, updated all balances, and saved it all on disk. Need to record a check you wrote at the store? No problem, Quicken's macros update your records in an instant.

Expense tracking, tax reporting, budgeting? Simple. Say you want to know your charity spending. Ask Quicken, and you get an itemized list and dollar total. You'll always know exactly where your money is going. Want spending for Job 104 or Account 3072? The answers are just keystrokes away.

Need cost reports, P&L's or other financial reports? Set up the spreadsheet you want in AppleWorks or Lotus 1-2-3 or Symphony. Quicken's ingenious Spreadsheet Transfer actually reads your spreadsheet and fills in the numbers you want, where you want them.

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and make recommendations. Well, the elves were too involved in production, and Mrs. Claus was busy in personnel, so that left the reindeer.

The first thing the reindeer did was figure that if they made a radical choice, it'd be the glue factory for them all. So, the top priority was keeping themselves in clover. With that premise, the only choice was MBI. After all, nobody'd ever lost a job by picking MBI. After all, that's what the Easter Bunny and Great Pumpkin had, and if it was good enough for them, then it would be good enough for Santa.

All the blue-nosed reindeer agreed. The only dissenting voice was that of a new hire, Rudolph, who had a multicolored nose with red on top fading into green toward the bottom. He looked at all aspects of Santa's operation, especially telecommunications.

Rudolph reasoned that Santa needed the ability to send and receive vast amounts of data and then integrate it into graphic presentations—there's nothing like a pie chart to liven up a report from one of the overseas distribution centers. With an Apple computer and Hayes Smartmodem, Santa could even call the Easter Bunny, Great Pumpkin, and all their affiliates.

Well, Rudolph's recommendation was received enthusiastically. Santa was so impressed that he put Rudolph in charge of the department. Oh, some of the reindeer grumbled, some transferred, and Rudolph had to watch out that others didn't stick an antler into his back. But, all in all, the reports had more impact, communication speeded up, and all the problems of telephone tag disappeared. Santa could proceed with his business plan.

TELETIPS

This section deals with news, views, and breakthroughs in the telecommunications world.

Reader Ideas

Ed Gilchrist suggests that software publishers offer on-line support for their products. The idea is greater contact with customers and an immediate and growing database of problems and solutions. Some firms, but certainly not the majority, embrace this concept. The latest publisher to take up this suggestion is Living Videotext. The company has started the LVT forum on CompuServe to answer questions and provide utility programs.

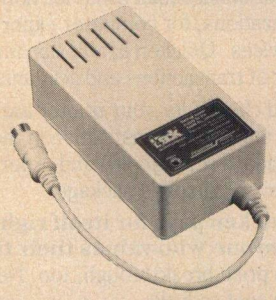
Stephen Rynas wants to use his Apple IIe to access an AT&T 3B2/400 system and cannot find a commercial program to do it. So, as many other resourceful Apple owners do, he's started to write his own program to tap into the UNIX system. He has made progress but is looking for more information. If you can offer ideas, contact him on his CompuServe PPN, 76167,2235.

On-Line Magazine

Russ Systems (no connection with me) has started an on-line magazine called *On-Apple*. It offers a family-oriented format, with games, art, recipes, columns for children, reviews, and technical pieces. It is free to readers with a modem, although you will have to read advertisements to get to the articles. Russ Systems charges advertisers $1250 per "page" (3072 characters).

The idea is to distribute the monthly to Apple dealers for free—the dealers presumably run it as a BBS. Customers call and read through the magazine, increasing exposure for the dealer and, of course, the advertisers.

Back-up Power for the Apple IIc®



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Strangest On-Line Games Ever

Vince Manna of The Play By Mail Company must have an active imagination and a death wish. If you've ever had an urge to be a don of crime, look at his multiplayer game Godfather: The Game of Mafia Mania, run on MCI Mail (it started with and continues to use the U.S. Snail Service as well). This off-the-wall role-playing game pits you against other bosses in an effort to corner the various racketeering markets and all the other aspects of organized crime. It costs $3 to set up an account and $2.25 per turn.

As for Manna's other game, which is like a free-for-all in Hades, all I'll say is that it would make Stephen King tremble.

Electronic Education

Those of you with visions of attending school in the new year, how about trying it via modem? Connected Education offers several two-month courses covering a variety of topics. Past courses include Applications in Telecommunications, Telelaw, Ethics in the Technological Age, and The Microchip Economy. The courses cost roughly $795 each, plus some connection charges.

The year, like the column, always seems to end too quickly. Yet, in the true spirit of the holiday, I'd like to offer a New Year's resolution: I will try to answer all letters readers send. I've been pretty good about the E-mail sent directly to my CompuServe PPN, 73537,1075 and my MCI Mailbox, RLOCKWOOD, but paper letters—alas, I've been remiss. There it is, in black and white: a commitment to be more responsive. Happy holidays and may your carrier signal stay true. +

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EARTHNEWS (MCI Mail)
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On-Apple magazine
Russ Systems
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Santa Cruz, CA 95060
(408) 425-0443 (modem)
(408) 425-0531 (voice)
CIRCLE 354 ON READER SERVICE CARD

NJ Apple Users' Group
(201) 839-7802 (modem)
CIRCLE 353 ON READER SERVICE CARD

The Play By Mail Company
P.O. Box 171
Graves End
Brooklyn, NY 11223
(718) 336-4149 (voice)
CIRCLE 355 ON READER SERVICE CARD

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72517,3107 (CompuServe)
aah298 (The Source)
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KidsTime™ II

for the Apple IIGS™

KidsTime™ II is an educational package for young children that emphasizes creativity, exploration, and skill development. KidsTime II contains two educational programs, **ABKey™** and **KidsNotes™**, which were derived from the popular and successful Macintosh™ KidsTime programs. Your children ages 3 to 10 will enjoy using both programs and older children will also enjoy KidsNotes. KidsTime II is an excellent example of the high quality sound and graphics available on the Apple IIGS computer.

Great Wave Software™

104 Gilbert Ave., Menlo Park, CA 94025, 415-325-2202

ABKey

ABKey teaches children to recognize letters of the alphabet and develop basic keyboard skills. The program includes many levels of challenge and difficulty. Pictures, letters, and synthesized sounds are used in this program. This program is made even more exciting with the use of high resolution color graphics and sound.

KidsNotes

KidsNotes encourages children to have a positive and creative experience with music while learning the basics of musical notation. This introductory music program allows children to explore many aspects of music. Younger children can enjoy playing pre-recorded melodies. They also learn to associate the notes played with the on-screen piano keyboard and musical score. Older children will enjoy composing simple melodies and experimenting with rhythm, pitch, duration, tempo, volume, simple time signatures, and simple key signatures.

The complete KidsTime II package retails for only **$39.95**

(Apple IIGS and Color Monitor required.)

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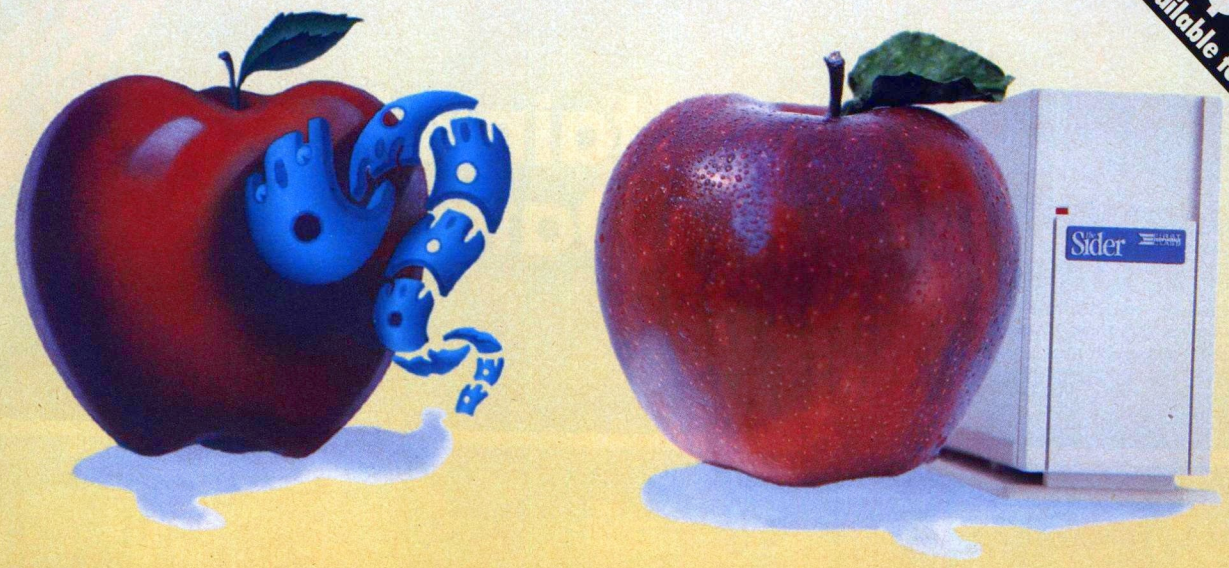

SIDER MAKES A GREAT APPLE PERFECT

First Class Peripherals introduces the first external 10-megabyte hard disk drive that is fully compatible with your Apple IIGS , II+ or IIe.

Sider is the Core of Your Apple's Production

Our Special Second Anniversary offer of **$499** is the affordable solution you've been waiting for. Operating your Apple® IIGS, II+ or IIe can become cumbersome when you have to continuously shuffle and store floppies. First Class Peripherals has a solution to the "floppy shuffle"... the Sider.

Sider, a 10-megabyte subsystem, is an economic business tool that allows you to save time and money with a bootable hard disk that is reliable, fast and affordable.

The field-proven Sider was introduced in 1984. First Class Peripherals worked closely with Xebec to produce a quality hard disk that works with all major operating systems—DOS®, ProDOS®, CP/M® and Pascal®—and is interactive from one system to another. The Sider's hard disk has an access rate many times faster than that of a floppy disk, and the storage on the 10-megabyte hard disk drive is equivalent to 72 floppy disks... and that's a lot of floppies to shuffle.

The Sider offers expandability. Its hard disk drive is partitionable, allowing you to allocate up to four operating systems on the same disk. And you can daisy-chain any two Sider products for a maximum of 40-megabytes of storage.

No Matter How You Slice It... It's a Sweet Deal.

You may ask yourself how First Class Peripherals can offer a 10-megabyte drive for only **$499.** The answer is simple. This second anniversary price is possible through innovative technology, high capacity on-shore manufacturing and factory direct sales methods. By selling through direct mail, dealer and distribution expenses are avoided, so you pay only for the product and its components... nothing more.

In addition to its great price, the Sider also comes with Siderware—installation and support utilities, host adapter card, all necessary cables and a reassuring 15 day money-back guarantee. Simply order the Sider and use it for 15 days. If you're not completely satisfied, return it for a full refund. If you choose to keep the unit (we're sure you'll love it), you also receive First Class Peripheral's one year limited warranty.

So Make Your Apple Perfect and Order a Sider Today!

To receive your 10-megabyte Sider for only **$499,** your 20-megabyte Sider II for **$799** or your B-Sider tape drive for **$695,** simply order using the coupon below, or for faster service order by phone and charge to your VISA, MasterCard or American Express. **Call Toll Free: 1-800-538-1307, Extension 23.**

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☐ 20-Megabyte Sider II @ **$799**

☐ B-Sider (tape drive) @ **$695**

Please add $15.00 for shipping and handling. Residents of CA and Nevada please add appropriate sales tax. Allow 4 to 6 weeks for delivery. Offer ends Dec. 31, 1986. Apple and ProDOS are trademarks of Apple Computer, Inc. CPM is a trademark of Digital Research, Inc.

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Enhanced Version Available For New Apple IIes!

Captain's Log... War Date 10.01.44

"Captain's Log, October 1, 1944. 0250 Hours. Fleet submarine USS Hammerhead proceeding Southwest at cruising speed. Our mission: intercept enemy convoy off the coast of Borneo. Disperse and destroy."

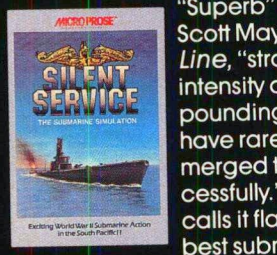
"0300 Hours. Two hours until dawn. Radar picks up convoy, escorted by two destroyers. We believe that one of the enemy's valuable cargo ships is part of convoy formation."

"0525 Hours. Torpedo rooms report full tubes forward and aft. Battery at full charge for silent running. We hope water temperature will provide thermal barrier to confuse enemy sonar."

"0715 Hours. Torpedo tubes 1, 2, 3 fired. Two destroyers hit and sinking. One of the enemy's last cargo ships coming into 'scope view — an ideal target position. On my mark... Fire Tube 4! Fire 5!"

"0400 Hours. Lookouts on the bridge. Target identification party reports one cargo ship, 4,000 tons, troopship of 10,250 tons, with two *Kaibokan*-type escorts. Moving into attack position."

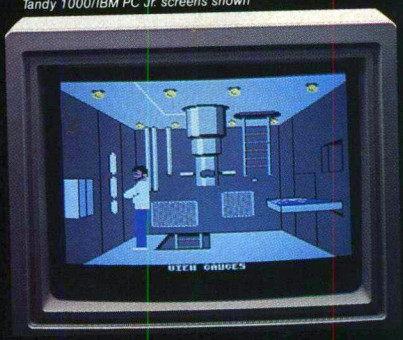
"0600 Hours. We are at final attack position. Convoy moving at 10 knots. Target distance decreasing rapidly... Crash Dive! Escorts have spotted us and are turning to attack! Rig to run silent."



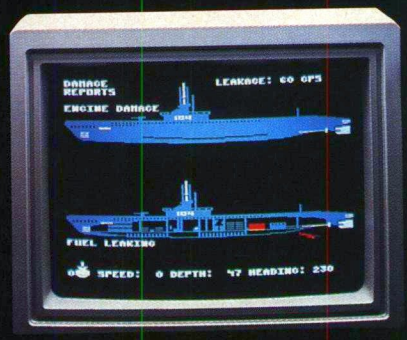
"Superb" raves Scott May in *On Line*, "strategic intensity and heart-pounding action have rarely been merged this successfully." *Analog* calls it flatly "the best submarine simulation so far." *Compute* comments "Silent Service's detail is astonishing." Join the more than 150,000 computer skippers who have volunteered for **Silent Service**, the naval action/tactics simulation — from MicroProse.

CIRCLE 205 ON READER SERVICE CARD

Tandy 1000/IBM PC Jr. screens shown



"0500 Hours. Sound General Quarters! Battle stations manned. Preparing for torpedo run. Gauge Panel OK. Periscope OK. Charts and Attack Plot Board OK. All mechanical systems OK."



"0700 Hours. Depth charged for one hour. Some minor damage, but repair parties at work. Destroyer propeller noises receding. We'll come to periscope depth for our return punch."

Silent Service is available for Commodore 64®/128™, Amiga™, Apple II family, Atari XL/XE, Atari ST, IBM PC/PC Jr, and Tandy 1000, at a suggested retail price of $34.95 (Atari ST and Amiga, $39.95).

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GamePort

BY BOB LINDSTROM

Most text adventuring remains tethered to the puzzle concept, but two first-rate new games may point toward new territory.

ADVENTURE ADVANCES

Text adventures and adventurers certainly have become sophisticated lately. The Open Mailbox command that once seemed so mind-boggling has been superseded by statements like "Pick up the screwdriver and stomach pump. Drop the used spatula. Tie the paper dolls to the Winnebago and order a side of fries."

Even so, text adventuring remains tethered to the puzzle concept—gather items, use them in the correct order, and save the universe/solve the mystery/kill the vampire/find the treasure.

Two first-rate new text adventures add spice and intrigue to the genre, however, and tentatively point toward new territory.

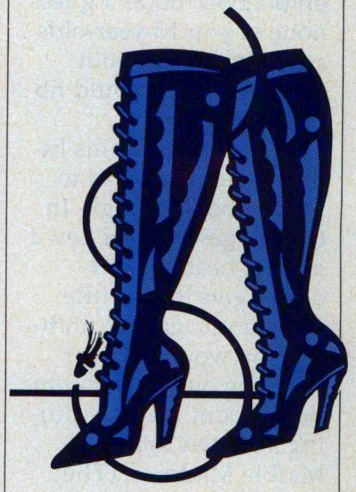
NAUGHTY BUT TOO NICE

Journalistic eyes shifted lasciviously last June when Infocom announced Leather Goddesses of Phobos, an "adult" adventure for the Apple II line and the Macintosh. Suddenly, those hours spent in front of juvenilia such as Grandpa Pac-Man and Cosmic Cow Catcher seemed worthwhile. The new game, by Steve "Hitchhiker's Guide" Meretzky, promised three levels of naughtiness and plenty of the kind of software titillation that a lonely computer reviewer could dig a word-processing program into.

For those expecting a nasty time, Leather Goddesses' Lewd, Suggestive, and Tame levels turn out to be more like Smirking, Nudging, and Dozing. For players who don't require prurient fulfillment from a computer game, though, Leather Goddesses has a lot of tantalizing Meretzky wit.

Leather Goddesses is less a sex adventure than a takeoff on those terrible old movie serials of the 30s, the kind with tin-can robots and football space helmets: Green space creatures appear at a bar in Sandusky, Ohio (seems like a long way to go for a beer), and whisk you away to one of the moons of Mars. When you regain consciousness, you spend time wandering through landscapes and mazes to find the items that will defeat the Leather Goddesses' imminent invasion of Earth.

Sound familiar? Mazes, items, landscapes? Yup, Leather Goddesses is



the stuff of mainstream text adventuring with a 3-D comic book, scratch-and-sniff card, and dramatic situations from some of Hollywood's worst thrown in just for the heck of it.

Although it's based on stinko flicks, Leather Goddesses is no nominee for a Golden Turkey Award. Meretsky enlivens his adventure conventions with verbal style; e.g., "The place: Upper Sandusky, Ohio. The time: 1936. The beer: at a nickel a mug, you don't

ask for brand names. All you know is that your fifth one tasted as bad as the first."

Leather Goddesses includes both male and female versions so players of both sexes can enjoy its innuendo. It's a nice touch that allows women adventurers, too often neglected in male-oriented games, to participate in the appropriate fantasy.

And then there're the three levels that protect innocent players from the bleep words. Players can switch between levels. When you choose Lewd, the computer asks your age. If you don't have the right answer, Leather Goddesses notes, Sorry, you must be at least 18 to enter LEWD mode. I guess none of you 13-year-olds are going to lie about that, huh? Who could fib to a computer?

The game contains little for mom and dad to worry about, though. In the Suggestive and Lewd modes, Leather Goddesses gets into a little salty language, but nothing you wouldn't hear standing outside my computer-room window during a heated round of Marble Madness. (The neighbors are starting to complain.)

WHO AM I?

So, just when I've saved the human race from intergalactic destruction, I wake up naked in a strange place.

Campbell Award-winning science-fiction author Thomas M. Disch sets up his new Electronic Arts adventure, Amnesia, with a familiar situation: You wake up in a hotel in New York City. You don't

CHRISTMAS TEMPTATIONS

Sleighbells ring, software sells. Here's what's new this season for the computer owner who plays everything:

Strategic Simulations, Inc., a leader in war games, has been role-playing this year. **Gemstone Healer** is a real-time adventure sequel to Gemstone Warrior. Guide yet another Little Guy past deadly skeletons and crazed zombies in your Apple II-series computer. For those who prefer more realistic fighting, Gary Grigsby has created **Warship**, a WWII tactical game of surface combat in the South Pacific. And for the Mac, SSI has conversions of **North Atlantic '86**, **Computer Ambush**, and **Questron**.

More wipeouts on the waves come courtesy of Epyx's **Destroyer**, combat action and strategy on a U.S. naval destroyer. If hand-to-hand combat more fully satisfies your violent urges, check out the chops and kicks of **World Championship Karate**.

The Macintosh gets the nod from Accolade with a conversion of its boxing strategy game, **Fight Night**.

There's no mistletoe growing on Activision this yuletide as several Apple II games find the shelves. **Transformers** brings Saturday-morning-cartoon hardware to computer adventuring. **Labyrinth**, a computer game based on the movie, puts director Jim Henson's eccentric creatures onto the small screen. While we're at the movies, give a squawk for **Howard the Duck: Adventure on Volcano Island**, an adventure based on last summer's Lucasfilms quacker. And from Activision's GameStar subsidiary comes

Championship Baseball, another joystick twister with split-screen action and strategic team drafting.

Been computing so much you're cutting out paper dolls? How about cutting out a helicopter with Brøderbund Software's **The Toy Shop**? Print out customized templates; do a little pasting onto cardboard; and cut and assemble your own cars, planes, and balloon-powered "steam" engines. It's The Print Shop by way of Santa's elves.

Fight it out on the elves' home turf when Electronic Arts lays out the snowy battlefield in the Apple II version of **Arctic Fox**, a tank-combat simulation in the frozen North. Invite your friends over to party and then wipe them out with EA's **Make Your Own Murder Party**, a computerized mystery generator that prints out rap sheets and personalities in order to make your next get-together an Agatha Christie whodunnit. Also, Dan "Mule" Bunten and Ozark Softscape return with **Robot Rascals**, a multiplayer computerized scavenger hunt.

The adventure pioneers at Sierra On-Line forge the way again with **Space Quest** for the new Apple IIGS (and the rest of the Apple II series), an animated arcade/adventure game in the tradition of King's Quest and The Black Cauldron.

For text-adventure fans, **The Pawn** is available for the Apple II from Firebird. This role-playing fantasy boasts one of the best parsers in the business.

"Hey, dad, can I destroy life as we know it tonight?" "Sorry, son, before you detonate nuclear weaponry in **Theater Europe**, you'll have to call an 800 number to get the code word." This contemporary NATO vs. Warsaw Pact conflict doesn't let computer generals take nuclear holocaust lightly, at least not without a phone call to IntelliCreations.

For more nuclear war, check out **Balance of Power**, programmer Chris Crawford's peace game of international politics, now converted for the Apple II line by Mindscape. For combat of a less-sophisticated sort, tighten up on a half-nelson in Mindscape's **Bop 'n' Wrestle**, a tongue-in-cheek and knee-in-kidney simulation of the grunt-and-flop world of professional wrestling.

At Last! A Chess Program that's On YOUR Side!

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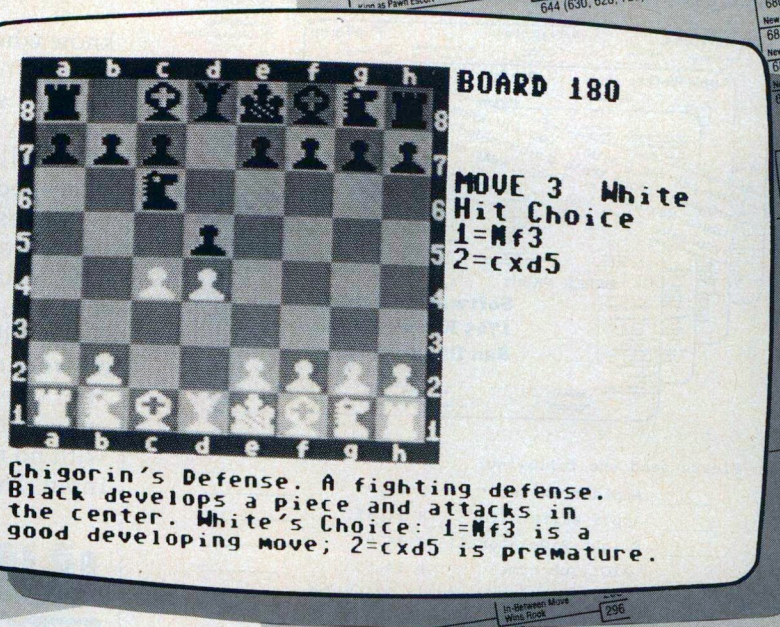

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- Back-Rank Checkmate
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- The Lucena Position
- King & Pawn Endings
- The Active Rook
- Perpetual Check
- Tempo & Zugzwang
- Isolated Pawns
- Passed Pawns
- Opposition of Kings
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- Hypermodern Attack
- Classic Openings
- Quizzes
- Tactics For Each Piece
- Weak Points in the Opening
- Brilliant Queen Moves
- King as a Pawn Escort
- The 3-Pawn Breakthrough
- Opposite Color Bishops
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- Converting a Material Advantage to a Win
- Forcing Checkmate Using Various Piece Combinations

. . . and more!

OPENINGS:

- King's Gambit
- Ruy Lopez
- Scotch Game
- Giuocco Piano
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- Alekhine's Defense
- French Defense
- Sicilian Defense
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- Pirc Defense
- Center Counter
- English Opening
- Bird's Opening
- Larsen Attack
- Sokolsky's Opening
- Benko's Opening
- Grob's Attack
- Queen's Gambit
- King's Indian
- Benoni Defense
- Nimzo-Indian
- Queen's Indian
- Dutch Defense
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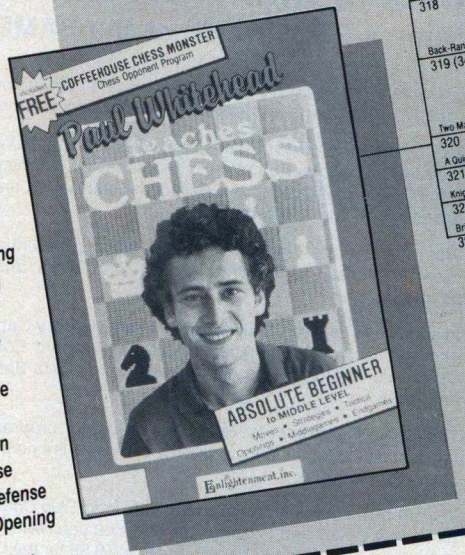
- The Dunst Opening

. . . and others!

IBM PC/PC jr (color or mono)
Apple II (64K)
Commodore 64
Atari ST (December 1st)



ROAD MAPS

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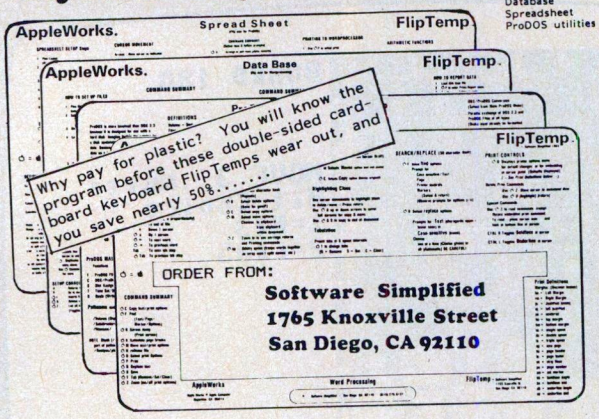

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CIRCLE 142 ON READER SERVICE CARD

know who you are. You're groggy. You're confused. You're disoriented. You don't have a stitch on. Don't tell me that's never happened to you.

Amnesia begins with large, evocative sections of text. As the plot begins to churn, veteran adventurers will feel caught in a revolving door. Line after line of description spills onto the screen with no room for player input. The flurry of words

avoids the get-paper/open-paper/read-paper nit-picking that wastes time in most text adventures. Disch's mind-jabbing text sweeps you along and involves you in a way interactive commands cannot.

After this stunning opening, Amnesia relaxes into more conventional text-adventure procedure as you wander around NYC trying to figure out why you are wanted for marriage, misbehavior, and murder.

Notable in Amnesia is the complexity of its setting. The game includes the entire street grid of lower Manhattan, along with its subway system.

Because of the limits of disk storage, not every corner has something on it. Even Disch and his colleagues at Cognetics Corporation couldn't get all of New York City onto a couple of computer disks. You do get to pass the Museum of Modern Art, drop by for a bite at Chock Full O' Nuts, and get inspiration at St. Patrick's Cathedral, though.

Amnesia's mind-jabbing text sweeps you along in a way interactive commands cannot.

Fascinating as it is, Amnesia still owes quite a bit to the puzzle aesthetic. What we need now is a text adventure that takes the lead from Amnesia's beginning sequence; an adventure that passes more control to a skillful author; an adventure a little less interactive and, therefore, a lot more thought-provoking.

AND NOW THE REVIEWS

Under the tree this month we've tucked a look at Mind Mirror, psychedelic honcho Timothy Leary's computerized approach to mind expansion; spacey doings of another kind in Electric Transit's Lunar Explorer; punks in space in Brøderbund Software's Breakers; Dixieland sleuthing in Activision's Murder on the Mississippi; a Mac version of Accolade's HardBall!; and more sports action in MacGolf from Practical Computer Applications. +

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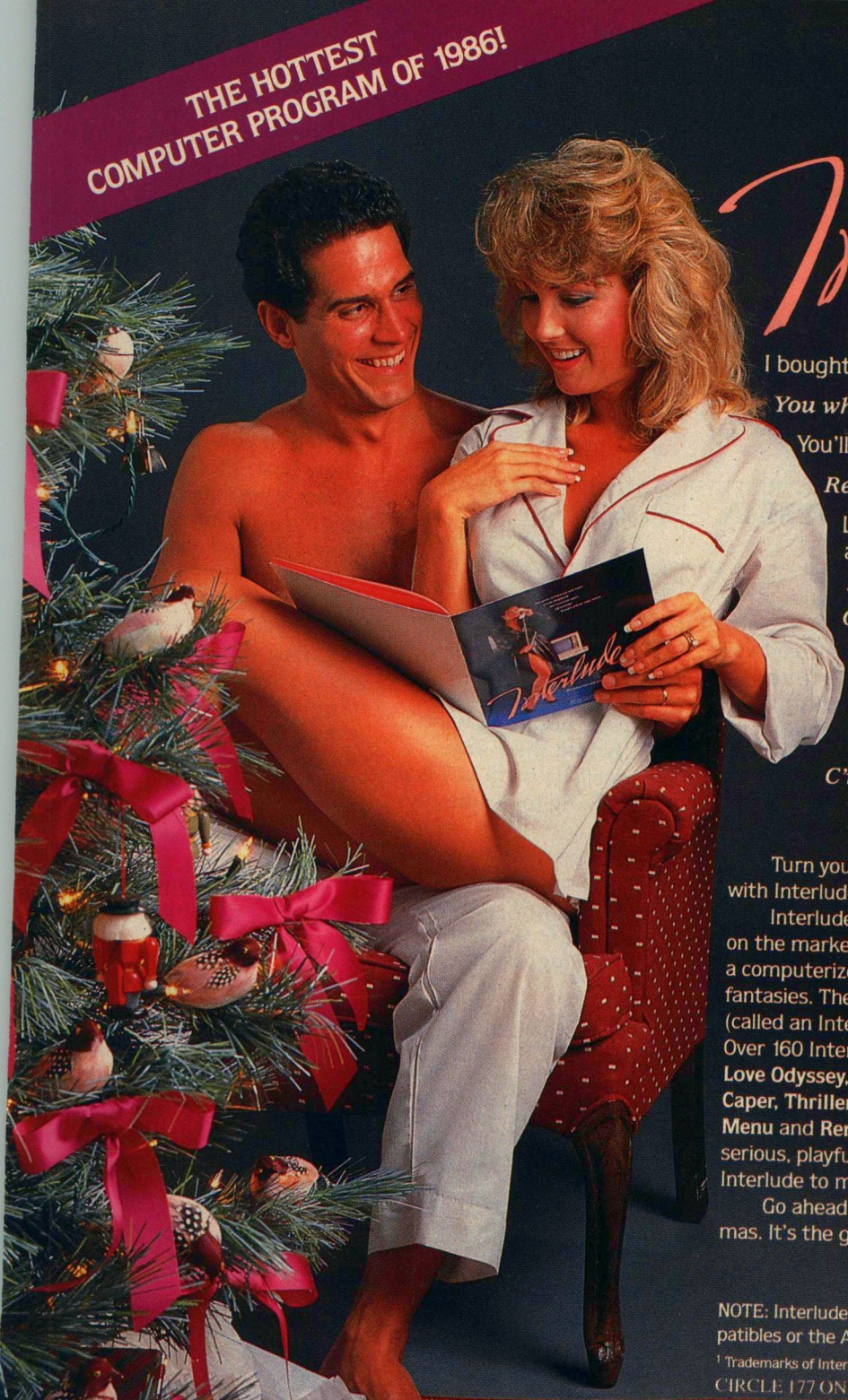

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ENTERTAINMENT

Reviews

Explore your mind or outer space; unravel mysteries on the Mississippi; and improve your golf, chess, and baseball skills with this month's pick of new Apple games.

TURN ON, TUNE IN, BOOT UP

Dear Tim,

I just wanted to drop you a line, Tim. It's about Mind Mirror. Headware you call it, IA (intelligence appliance), and something about mental fitness. You toss out words such as *psychometric*, *Macro-Thoughts*, and *Microscope*. I read the words, but I figured, "What's to worry?" and plunged into the game without detouring too far into Jargonland.

When I emerged, everybody asked me, "What is Mind Mirror? What's it all about?"

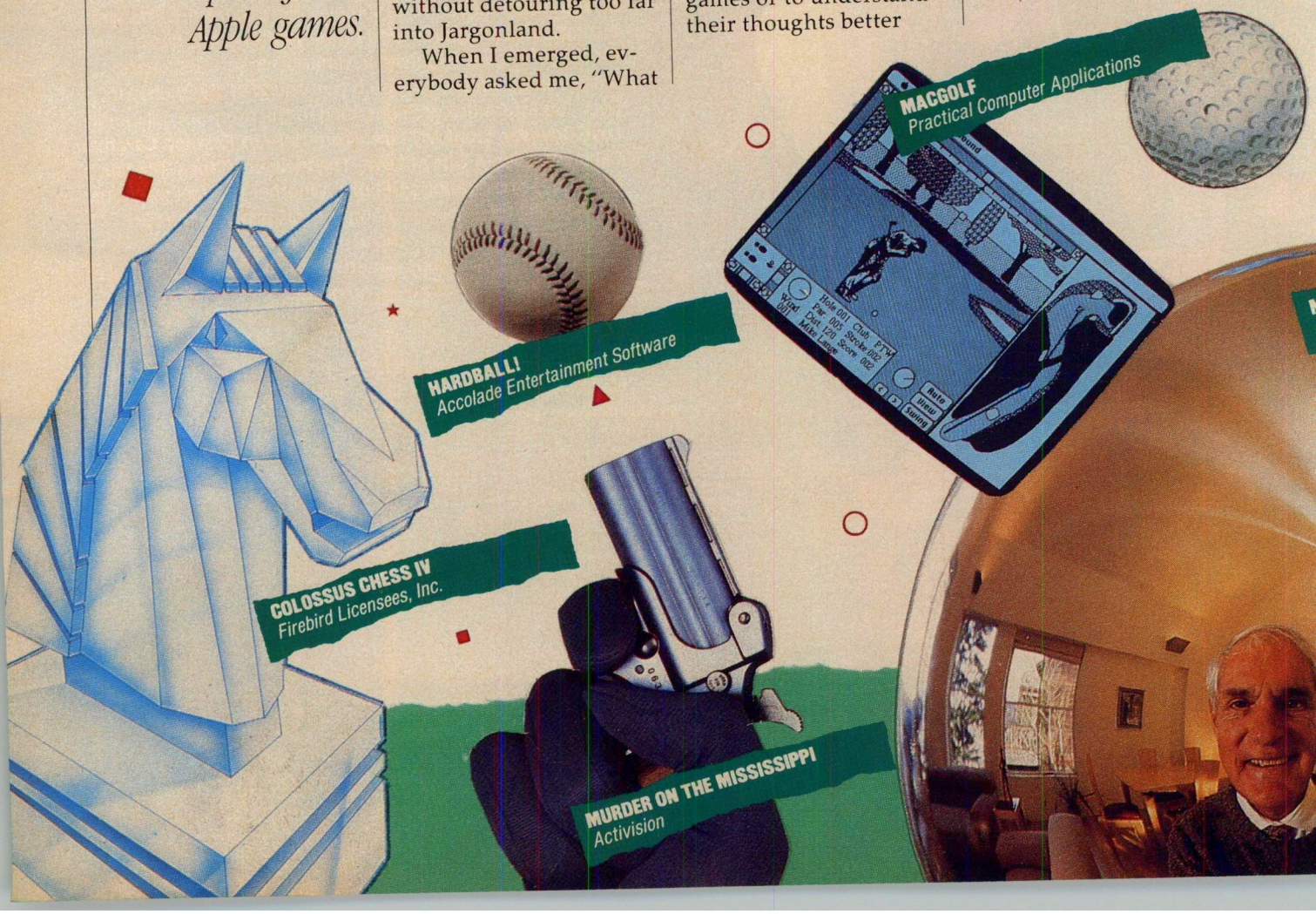
I looked very thoughtful and answered, "It's a little like Alter Ego and a little like Mind Prober." Then I shook my head and said, "But different." That drove them crazy, you see, because I hadn't really told them anything. (The truth is, I was still trying to decide myself.)

Tim, you say that individuals can use Mind Mirror alone to play mind games or to understand their thoughts better (Auto-Play). Also, you say that people can play the game in groups, perhaps learning more about each other in the process (Inter-Play).

Well, if you want to know what I think, Mind Mirror's best quality is you, Tim. I'm not sure what I learned about myself, or anything else for that matter—but I'm getting ahead of myself.

I tried all different levels of play: Beginner, Intermediate, Master, and even Professional. At first the additional coaching of the Beginner mode was helpful, but later I was able to bypass that assistance.

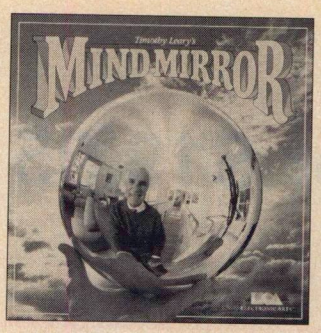
I tried both Mind Play and Mind Tools. Mind



Play was amusing. For instance I used the adjective rating system to rate my favorite singers against each other. I also rated religious figures and even computer software. In Mind Tools, I rated my housemate in her many moods and myself in several of my manifestations. By the way, tapping the space bar to change between Plain Talk and Shrink Rap (psychological terminology) is a good idea. For instance, I might not have understood a word such as *cute* as signifying *eager to please*.

The program began to show promise when, after completing my ratings, I displayed my first set of Mind Maps. You suggest a similarity to the human eye, the inner circle of the map being the retina. I like that analogy. Human qualities (such as *energetic* or *irritable*) encircle each of the four Mind Maps, and each map shows a lot of information quickly—not only what human qualities you selected from the ratings, but also how much of each quality. You also see a different number to represent each rated subject, making visual comparisons possible. Very interesting.

OK. But, Tim, the Life Simulations are where you really begin to shine. As in Alter Ego, you take the rated subject into life, but Mind Mirror starts even further back, all the way at conception. I laughed at their trials and tribulations—being both sperm and egg—while trying to make decisions consistent with the rated



subject's personality. At first, I kept checking with the Mind Maps to see if my results were in the win circle.

Eventually I played games at skill levels that had less and less feedback and smaller win circles. I went all the way up to the Wizard level, where I couldn't get any feedback at all and there was no win circle.

The Life Simulations are full of Learyesque humor and an almost predictable unpredictability, but it's the personal touch, the sense of Tim Leary, that makes this game most fun. I mean, I was able to play each of the four Realms consistently with the personality of the rated subject. I was even able to obtain the passkeys to enter the final phase of Social Interaction and navigate my way through PTA parties, church groups, socialite parties, and other social venues, and finally through my home zone to win the game.

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Perhaps I improved my understanding of what it's like to try to be someone else and, in doing so, learned a little better what I am and who I am. I certainly learned more about who you are, Tim. And I learned a lot of new phrases—you sure can coin a phrase.

Since this letter is also a software review, I guess I should rate Mind Mirror. At the risk of not being impartial, I have done so with Mind Mirror itself. The results? Vivacious, confident, visionary, and uninhibited. Sounds like someone we all know.

Rusel DeMaria

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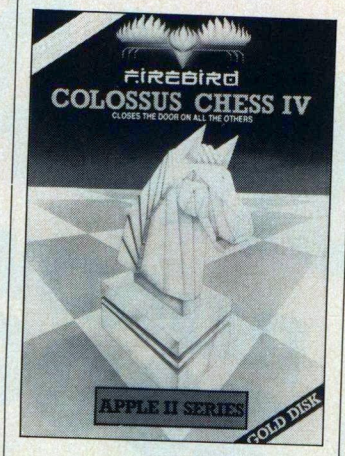
CHECKMATING THE COMPETITION

Colossus Chess IV is more than just another good computer chess game. It stands above others of its ilk, not only because it plays an excellent game of chess but also because it offers the widest range of options of any chess game on the market.

The most obvious of these options are cosmetic: You input your moves via cursor positioning or algebraic notation (e2–e4, for example). Joystick control, although indicated on the back of the box, is not actually available in the current version of the game.

You can view the board display as a conventional flat board or, if your computer has 64K RAM or more, as a high-resolution three-dimensional board. In both displays, the pieces are clearly drawn and easy to distinguish. A second screen,

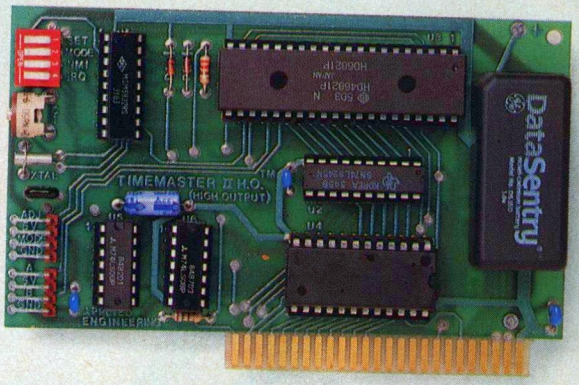


which you toggle on and off with the space bar, includes information such as the move record, assumed move, and a material and positional evaluation of the play that's in progress.

More impressive, though, than the physical appearance of Colossus Chess is the flexibility it gives you in setting up the program's parameters. Like most chess games, Colossus Chess allows for the selection of difficulty level, but even in this standard feature, the program gives you more possibilities than most others do. You can modify the program's ability to "think" x-number of moves ahead, effectively handicapping the game. The amount of time the program gets to consider its move is also adjustable.

Additionally, Colossus Chess lets you set up chess puzzles, solve chess-mating problems, or play the equivalent of "blindfold" chess by making the black pieces, white pieces, or all pieces invisible. These options are just the appetizers among a smorgasbord of features that also includes computer-vs.-computer

The first clock card to add time and date to AppleWorks'™ screens and files.



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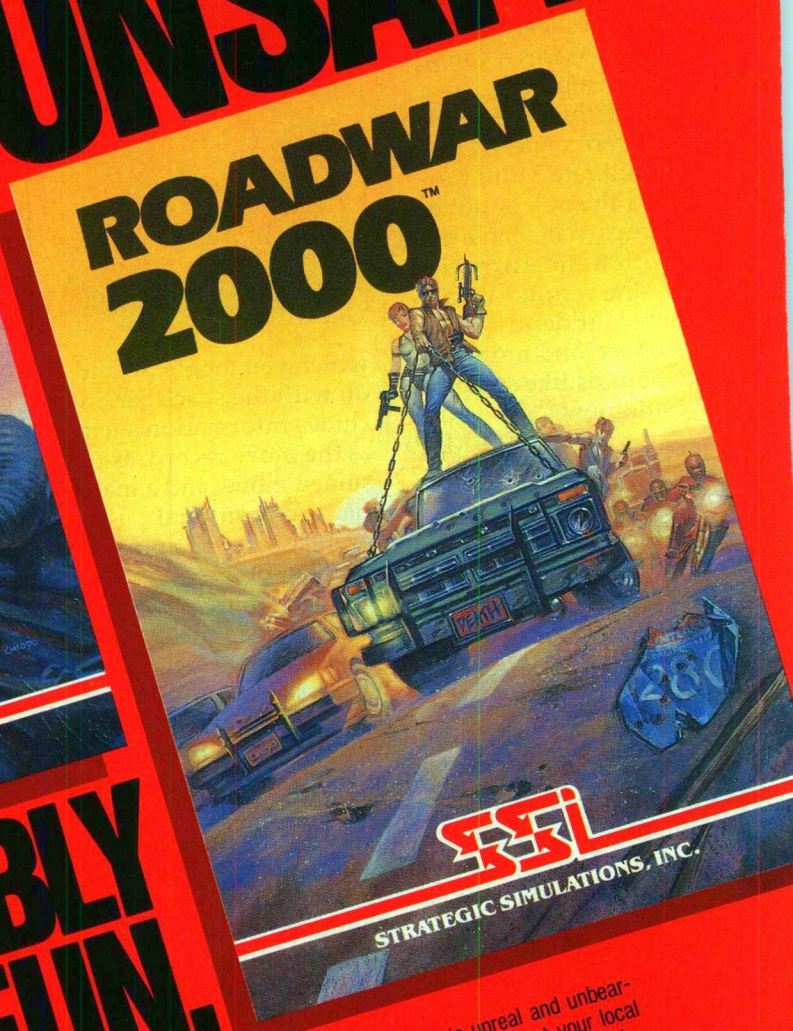

SHARD OF SPRING™, the new multiple-character role-playing game from SSI, promises an adventure unbounded by the mundane constraints of reality. It is set in a world where magic overrides the laws of physics, where monsters, gnomes and elves outnumber mere humans. Your quest is to recover the wondrous Shard, the giver of eternal Springtime. This precious crystal has been stolen by a demonic sorceress. Assemble five characters and endow them with different combinations of speed, intellect, strength, endurance, and warrior/wizardry skills. Then guide them wisely through evil dungeons and treacherous lands as they search to regain the Shard.

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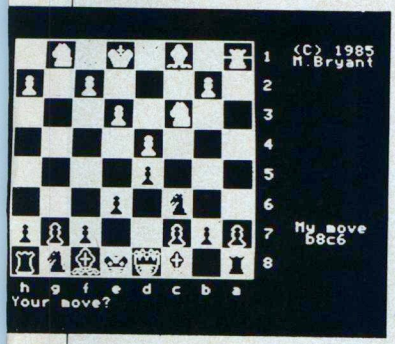
CIRCLE 131 ON READER SERVICE CARD

play; elapsed-time clocks; back-stepping through moves; the ability to look



at legal moves (perfect as a tutorial aid for inexperienced players); and a clear, well-written manual that contains only one small glitch—it neglects to tell you to use the cursor key when you are changing any of the program's parameters.

Probably the most useful feature for novices as well as veteran chess players is the program's printing capabilities. After any given move, the program can print the board or a record of previous moves. It also allows for continuous printing during game play, providing hard copy of moves and technical information.

Colossus Chess can examine 300 positions per second, according to the documentation. Its opening book contains approximately 3000 positions, and the program can "look ahead" up to six moves. At its highest level of play, the program approaches Grand Master Tournament level. Nothing that can occur in a game of chess has been omitted: Colossus Chess handles underpromotions, the 50-move rule, draws by repetition, and difficult mating combinations as easily as it does standard mates, castling, and en-passant captures.

Colossus Chess IV's wide range of options lets you tailor the game to your tastes, execution is quick and efficient (the level of play influences the speed), and the mechanics of play are top-notch. If the program has a drawback, it is only that its assumption of prior knowledge of chess makes it unsuitable for rank beginners. For anyone who knows enough to move pawn to queen-4 on his first move, however, Colossus Chess IV may well be the best of its kind currently available.

James V. Trunzo

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PLANETARY MAYHEM

The bubble drifts away between the stars. The Ancient One looks downright miserable. His voice grows faint. "Save us, kid. Assemble the four elements and unmask the Creator. Restore peace to Borg. Save the race. Save the world!"

One by one, the stars explode, drilling spectrums before you have time to blink.

But now you can feel a body—a body in agony. Your body.

You awaken on the floor of a bar in the rough section of a rough mining outpost, just as a squad of Gaks, a singularly unattractive species of police, comes thundering into the joint. A seemingly friendly being about the size of a commercial refrigerator picks you up and stuffs you into a closet for safekeeping.

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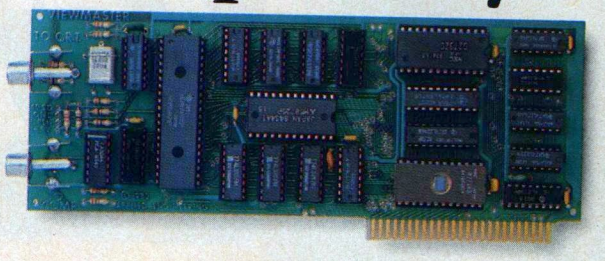

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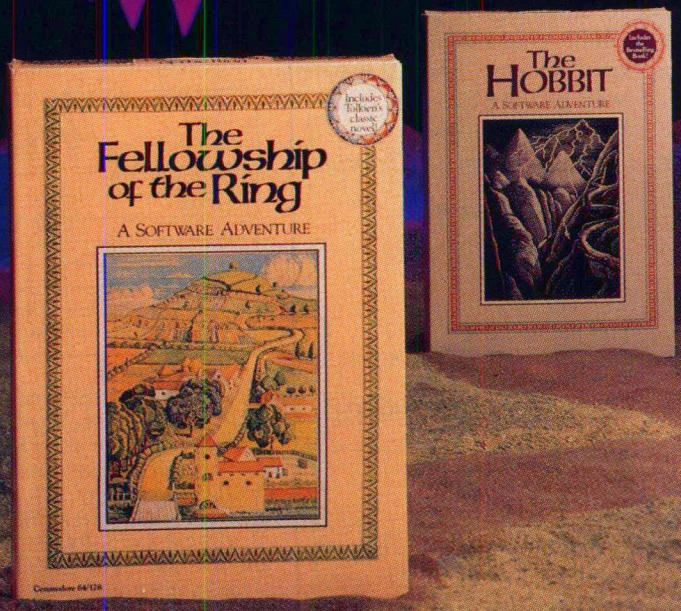

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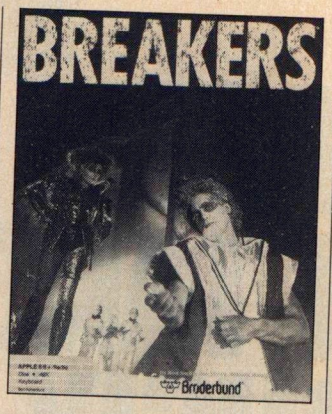
CIRCLE 138 ON READER SERVICE CARD

stranger in a place that's even stranger, the fate of a world in your trembling hands.

Sound familiar? No? Oh well, for some reason all my vacations (and quite a few of my business trips) seem to start like that. But I'd never been to Borg before. It seems that the natives are friendly, but the off-worlders who have come to infest the environs are of a rather indelicate, if not totally unsavory nature. They hail from all parts of the Slug Nebula, the dregs of a dozen civilizations and as many species and mutations as it takes to fill a spiral arm. There is a corrupt bureaucracy, complete with a bestial enforcement wing. The rest of the detritus is a motley crowd called the Breakers that makes the cast of *Road Warrior* look like yuppies. And those are the nice ones.



You have to deal with these characters in order to complete your quest. Your only resource is your mind, a sometimes sorry consolation indeed when you are confronted with a dim-witted Gak or any of the other lethal opponents you will encounter in your travails.

There is method to this madness. The authors of this epic have deliberately set out to create a comic-book universe that incorporates elements from everything from "Buck Rogers" to *Buckaroo Banzai*, from cyberpunk to social consciousness and beyond. They handle all this diversity in a no-holds-barred, tongue-in-cheek fashion that rolls along at a hilarious rate. Even the 1200-word parser (the portion of the program that interprets English and drives the command structure) seems to have an attitude problem when it comes to chiding you about your grammar and spelling.

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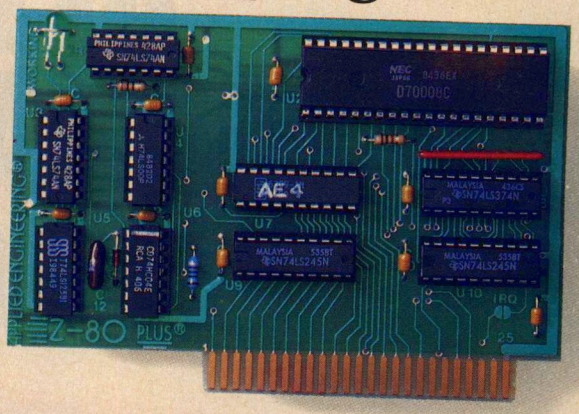

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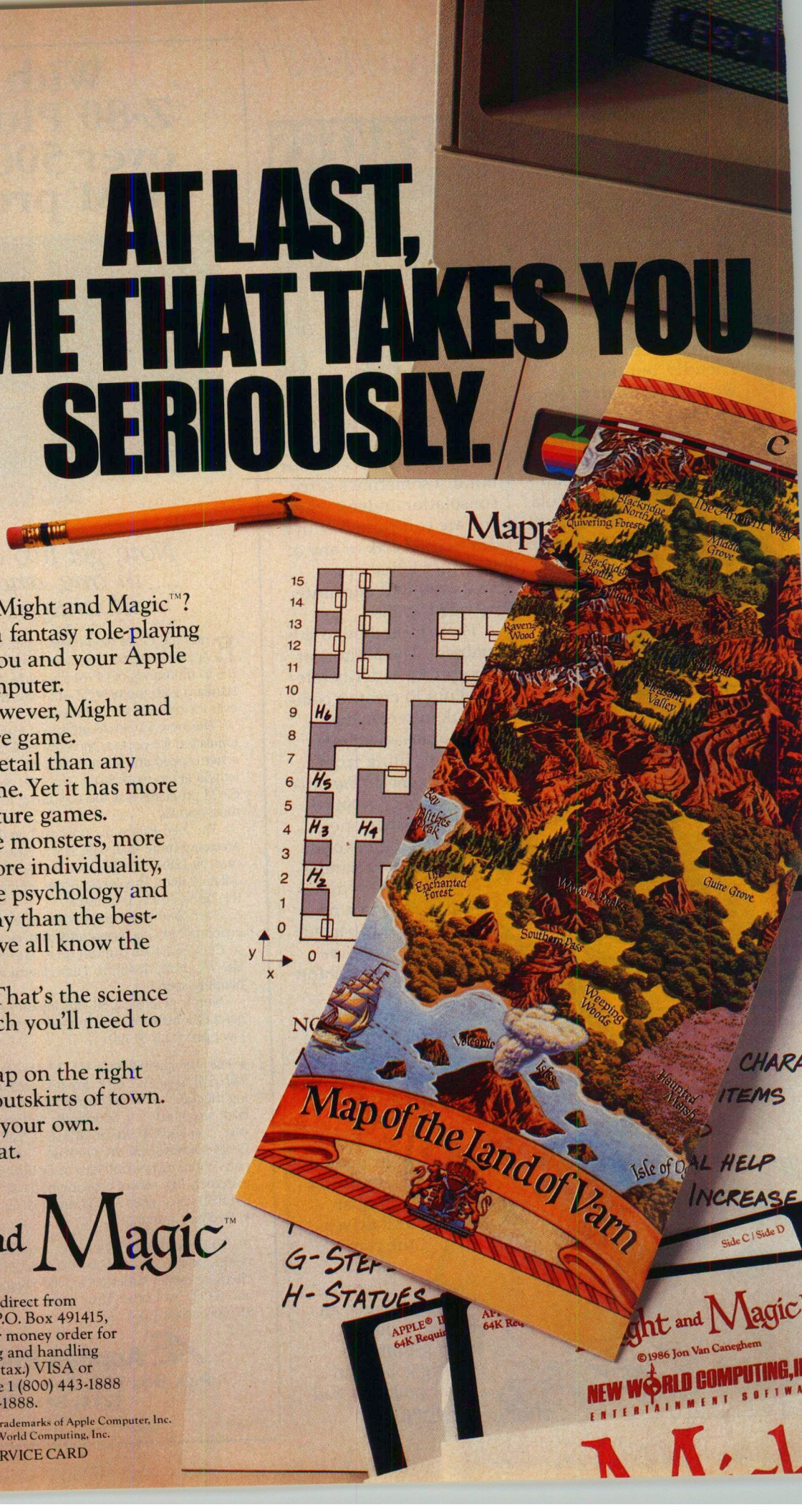

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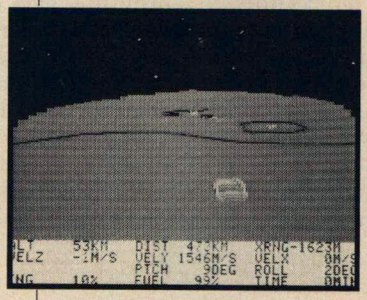

One minute later, we gently touch down at Tranquility Base. Sweaty palms and heavy breathing remind us of the disaster that was only seconds away.

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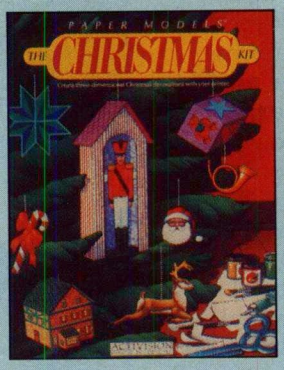

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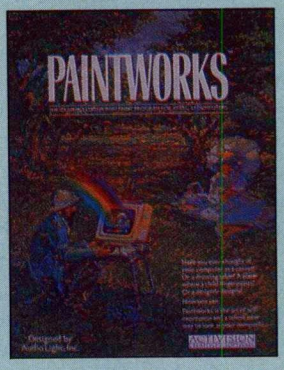

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Make no mistake about Lunar Explorer. It is no joyride. You'll spend hours mastering the very basics of engine thrust. For impatient novices, the simple act of landing can seem frustrating and nearly impossible.

The excellent Lunar Explorer manual gives you much more than LLV operating instructions. It explains in great detail the broader perspective of men and women working in space. As an LLV pilot, you play a key role in the U.S. Space Colonization Project. You'll read a detailed discussion of the DAKOTA space habitat, the Earth-orbital structure where 10,000 men, women, and children live and work in space. Numerous drawing and diagrams give you an exciting tour of America's 21st-century space station. Likewise, you'll find a thorough discussion of the Lunar Mining Facility, which provides the DAKOTA with raw materials.

The still-curious will appreciate the lessons on Newtonian physics and the physical and geographical properties of the moon. The game package even includes suggestions for using Lunar Explorer as a foundation for space studies in the classroom and a fine list of additional reading material.

The graphics and animation in Lunar Explorer could use improvement—you may find the jerky and simple animation disappointing at first—but as you concentrate on the marvelous simulation, your imagination will more than take over. Sound too is lacking, limited to ordinary buzzes and beeps.

Like the real future of space flight, Lunar Explorer is a tough challenge, a catapult into the future.

Peter Tucker

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CIRCLE READER SERVICE NO. **373**

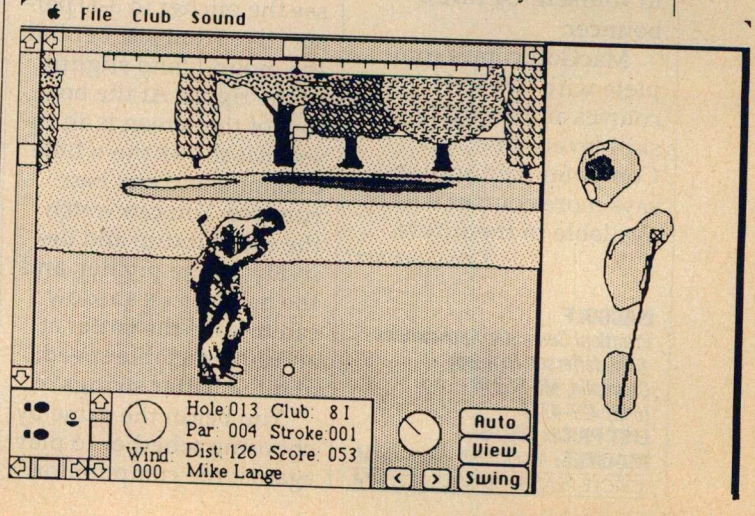
MACINTOSH GREENS

I have never been so impressed by a software program in my life. MacGolf combines brilliant research with superb animation and excellent program design. That assessment may sound a little extreme, but believe me, it's not. I currently have a crowd of programmers clustered around my Mac playing MacGolf. They've been playing for six hours now, and frankly I'm getting tired of being sent out for pizza and beer.

It's easy to see the attraction. MacGolf is involved, intricate, and very realistic. Even my mother, who is allergic to computers, was favorably impressed by this program—no mean feat. She was quite the golfer in her time and knows the game far better than I do. She particularly liked the fact that the whole game was mouse-driven, and once I explained the control panel to her, she was swatting 'em down the fairway like a real champ. When she left, she was muttering something about buying a Mac so she could play golf without throwing out her back.

So enough of the shameless testimonials. Here's what MacGolf is about: You (regrettably a male figure, whether you fit the description or not) stand at the tee and address the ball. Slide bars and buttons allow you to adjust variables such as swing power, posture, attitude of the club's attack on the ball, and direction. An overview of the fairway is on the left, and wind direction and strength show up in the control panel (the wind changes with every turn of play). You set everything the way you want it, click on the View button, and then click on Swing. Your figure takes its stance and with a most satisfying "swoosh-whack" sends your ball off. Its progress appears on the overview. Odds are that the next sound you hear will either be a splash or an "oops."

Once you get the feel of the game, you will probably find yourself in a sand trap or in the rough (long grass). Good luck. Swing power varies dramatically, and obstacles are not easy to overcome, although you might find it amusing to note that, try as you might, you cannot hit a tree. Nor can you be



clopped on the head by somebody else's wayward ball. Eventually you will make it to the putting green. Here your control conditions change again, and so do some of the basic laws of physics. The wind indicator now shows the lay of the land; if you hit the ball too hard, it will roll over the hole. Maybe Newton was wrong—but if you play MacGolf, you will no doubt find it in your heart to forgive him.

Speaking of forgiving, forgive me. Two more programmers just showed up, and MacGolf allows only four players per game (unless you're playing in teams). They're getting restless, so I'm going to get that pizza. And you should get MacGolf. Just remember to keep it to yourself. Or hire a bouncer.

MacGolf comes complete with two golf courses and a variety of skill levels. Practical Computer Applications says more courses will be available in the future.

Ken Goehner

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PLAY BALL!

I can see why they call it HardBall! Its superb graphics and minimal manual led me to expect an easy time, but as soon as the computer pitcher had fanned my first batter for three strikes, I knew I was in trouble. I lost my first game of HardBall!—26 to zip. I got determined. I wasn't going to go down as easily next time. I watched the pitcher during his windup; watched the shadow of the ball to help gauge its trajectory; kept my eyes open for curves, sliders, and screwballs—and, just like the Mighty Casey, I struck out again.

HardBall! is a one- or two-player baseball game from Accolade. I've seen quite a few baseball simulations over the years, and this one might be the most enjoyable. It doesn't have a lot of teams—only two, and they're completely fictional, at that—and there are times when you might like more control of the players, but the pluses far outweigh the minuses.

For starters, HardBall! has fantastic graphics. In the pitching/batting sequence, the figures are four or five inches high and fully animated. You see the pitcher in 3-D perspective from just behind the mound (and slightly to the right). At the bottom of the screen is an inset that shows the whole diamond and any base runners. You can watch the full windup and delivery by the pitcher, and the ball and its shadow sail toward the batter at an unpredictable speed, and the batter swings . . .

You begin the game by choosing whether to play against the computer or against a human opponent. You also decide whether or not to have designated hitters and determine the visiting and home teams. In a two-player game, the defense (fielding team) uses the joystick, and the batter/base-running side uses the keyboard.

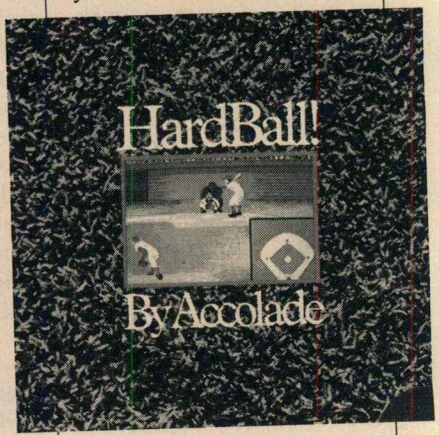
Each pitcher on your roster has a set of four pitches in his arsenal, from a selection that includes fastballs, curves, sliders, sinkers, off-speed pitches, or change-ups. There is also a pitch called the fastball!—a real smoker. You use the joystick to pick one of the pitcher's four pitches, and then you pick whether to send it over the plate, high, low, inside, outside, or with any possible combination of these options (high and inside, low and outside, and so on). The batter can then take the pitch or swing; swings can be straight on, high, low, inside, or outside. The batter can also choose to bunt, and you can instruct a man on base to steal. In case of a steal attempt, the catcher automatically throws to the appropriate base. I didn't see any steal attempts succeed.

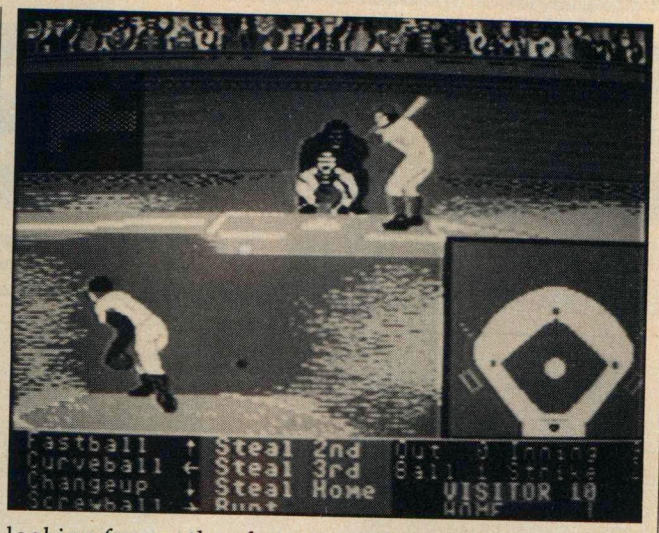
When (and if) the batter hits the ball, the scene changes to the Fielding mode. You see half the field at a time, and the closest fielder to the ball, whom you control with the joystick, is automatically ready for action. You can dive for grounders or catch line drives, pop-ups, and long flies. You can also try to pick off runners after you catch a fly ball. You throw to any base by pulling the joystick in the appropriate direction.

Meanwhile, the batter will run to first automatically, but once you instruct him to take the next base, he's committed. Any man on base who is forced by other runners will advance automatically, but you have to instruct any unforced runners. More than once I've watched my man on second base stay put while the batter singled to right field. If I had told him to, he could have gone to third, or even scored.

You might think that seeing only part of the screen at a time would be a disadvantage and that the switch from one view to another would be confusing. Surprisingly, the scheme works excellently. It happens so quickly that you usually have time to adjust and gain control of the appropriate man. The advantage is that the figures are larger than they could be if they were all on the screen at once.

Pitching is an art, not just of speed and accuracy, but also of timing and strategy. Your most successful innings will be those in which you throw a mix of pitches. For instance, an inside fastball followed by a slider right over the plate often fools a computer batter who is





looking for another fastball. One fact of baseball life is that pitchers tire. As the pitcher loses his stuff, the batters will begin to hit almost all his pitches. You take a big chance if you try to keep one pitcher through a whole game.

Other managerial decisions include exchanging player positions or substituting players in other positions; setting infield and outfield alignments; and even intentionally walking a batter. On the other hand, the pitcher can't pick off a runner, fielders never seem to commit errors, and you can't argue with the ump.

HardBall! has a pretty stiff learning curve, in particular when you're learning to hit the ball—a batting-practice mode might help. But you won't soon grow bored with the game. This game offers some real challenge, and you'll surely cheer when you finally beat the computer.

Rusel DeMaria

HARDBALL!
Accolade Entertainment Software
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(408) 446-5757
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REQUIRES: *Apple II Plus, IIe, or IIc; 64K RAM*
CIRCLE READER SERVICE NO. **375**

CRUISING IN PLACE

I say, dear readers, what started out as a jolly relaxing endeavor transformed into a marathon odyssey of the most somniferous proportions. Indisputably, perusing the box containing Murder on the Mississippi, a joystick-driven, murder-mystery adventure game from Activision, tickled my fancy. What could be more exciting than matching wits with a murderer while aboard a riverboat on the Mississippi River—especially in the company of the renowned sleuth Sir Charles Foxworth?

Well, would you believe watching cars rust in Liverpool? How about waiting for a headache to go away in the middle of Heathrow Airport? Perhaps telephoning the BBC and being put on hold? With or without Muzak, it doesn't matter.

The whole problem revolves around the interface. This chap, Adam Bellin, who created the program in the first place, deserves a pat on the back for thinking up a more or less innovative approach that involves a joystick in place of a parser structure. You move Sir Charles and his faithful manservant Regis Phelps across the screen with the joystick and then pick from a menu whenever you want to do something or question somebody. It's a jolly, jolly good idea. In the second place, however, Bellin deserves a swift kick for the way he put this system into practice.

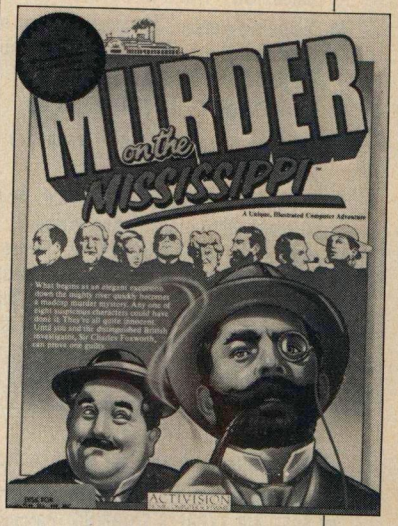
See here, mate, I don't expect Sir Charles to be a British version of Speedy Gonzalez, but considering the way he moves, he should be called Sir Jerry Atric. Getting through a door is an excruciatingly painful object lesson in monotony. Walking from the top deck to the boiler room is an exercise in boredom. It's enough to make you take up snail drag racing for a hobby. In case you need to be told again, moving around is slow, slower, slowest—and that *is* on the faster setting.

That is not to say the plodline, I mean plotline, isn't enticing. By jove, Rob Swigert weaves an interesting enough tale, with an assortment of eight suspects, a variety of clues, and apparently contradictory testimony. Your task is to sort the fact from fiction and nab the murderer.

Indeed, questioning the suspects is one of the highlights of the game. The characters start to flesh out, the story begins to take on substance, and the resulting interaction between you and the program imbues your quest with a sense of purpose. Murder on the Mississippi even lets you take notes on the screen in scripted letters. You can share these notes with the suspects in your efforts to catch the murderer.

Again, the ideas are wonderful, but the execution leaves you waiting around like one of Henry VIII's wives in the Tower of London. It is not *if* the system chops off your involvement, but *when*. I suppose this torpor could be called suspense, but suspense should emerge from the story, not from the amount of time you spend guiding Sir Charles across the screen.

So, if you have a lot of time on your hands, a deep desire to play a murder-mystery adventure



game set on riverboat, and an incredibly stiff upper lip, then sound a tally ho and pick up Murder on the Mississippi. For the majority of us who want to spend more time playing than waiting around, however, this is one boat slower than the one that goes to China. Murder on the Mississippi holds some good ideas, but they remain in dry dock awaiting repair.

Russ Lockwood

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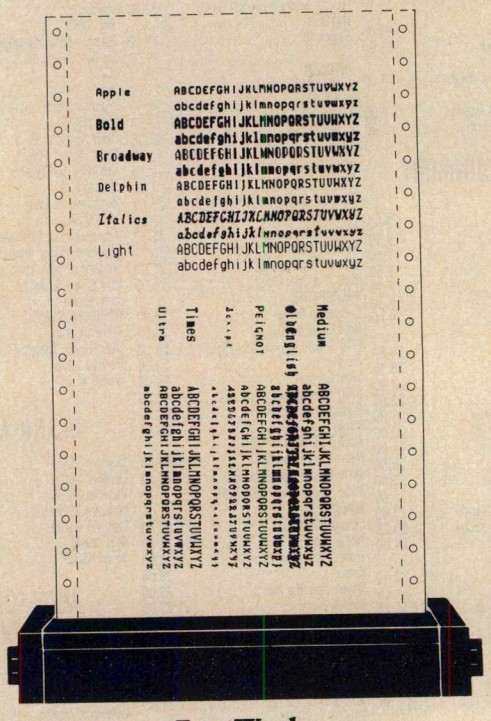

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CIRCLE 173 ON READER SERVICE CARD

BY MICHAEL WIESENBERG

WORDS WORTH A MILLION

Can you write a word-generation program for this month's puzzle?

You can play mathematical games with words by using a simple substitution code. Assign a numerical value to each letter of the alphabet, starting with 1 for Z, 2 for Y, and working backward to 26 for A. You can then come up with a value for any word in the English language by multiplying the values of each of its letters. For example, the word *hello* is worth 1,128,600, obtained by multipying 19 × 22 × 15 × 15 × 12. Is there an English word equal to exactly 1,000,000? If not which comes closest? Only words found in *The Random House Dictionary of the English Language* (unabridged edition) can be used—no capitalized words, none with hyphens or other embedded punctuation, nor those designated as foreign. Come up with a program that *generates* words rather than testing them.

Send a complete program that solves the puzzle. If you send a disk, also include hard copy. Your program must be short, elegant, and self-documenting. The best solution wins a one-year subscription (or extension) to *A+* and a Certificate of Excellence in Programming and will be published here. Send all entries, which must be received by December 8, 1986, to Computer Calisthenics, Box 2329, Stanford, CA 94305. All entries become the property of the author. The winner will be selected by the author, whose decision is final. The winning program will be announced in *A+* March 1987.

ILLUSTRATION BY CRIS MORTENSEN

Answer to July's Puzzle

July's puzzle sent the "coincidental" mathematician back to buy four items of four different prices from the absentminded clerk, who entered them on a desk calculator, pressing the multiplication key instead of the addition key and coming up this time with $6.75, the product being the same as the total would have been had he been adding. We asked what those prices were, whether they were unique, and how quickly a computer program could produce them. Another way to state this problem is: What four numbers add to 675 and multiply to 675000000?

One way to solve this sort of puzzle is by examination, doing most of the work by hand before putting the partial results into a program. This was the approach several entrants took. They determined, for example, that the prime factors of 675000000 were 5, 5, 5, 5, 5, 5, 5, 5, 3, 3, 3, 2, 2, 2, 2, 2, and 2.

They also determined that no single item could be made up of more than three 5s, because four 5s multiplied out to 625, making it impossible to spread the remaining factors among three other items and still have all four add up to 675.

There are but three 3s, so three items cannot each have one 3 as a factor, because then the sum would not be divisible by 3 (but 675 *is* divisible by 3).

Since 675 is odd, either *one* of the terms contains *no* 2s (that is, multiplies out to an odd number), or three of them contain none. If three contain none, the fourth must contain all the 2s (multiplying out to 64), and (from the earlier conclusion) the

number must contain one factor of 5, and nothing else—thus it must be 320. If so, at least one of the other items must contain three 5s and nothing else. (It can't have a 3, because that would make it 475, which, added to 320, is too big, and we've used all the 2s.) The other two terms must then be 5, 5 and 5, 5 in combination with the 3s. From this conclusion, you can extrapolate that no item can contain all the 2s.

You can draw further conclusions

July's winner is a short, sweet program from St. Cloud, Minnesota.

by examination. Given the fairly strict limitations on what factors can constitute each item, a program examining only those factors quickly comes up with the solution to this problem.

Duy-Minh Nhieu of Montreal gets an honorable mention for this approach, his 40-line BASIC program, 13 lines of which are remarks, executing in less than two seconds. He demonstrated that we are not talking about one set of answers, but two: $2.25, $2.00, $1.50, $1.00, and $2.50, $1.80, $1.25, $1.20.

The trouble with this method, however, is that, having gone this far in preliminary reasoning, you might as well go the rest of the way and work out the answers by examination—and that wasn't the point. We want the *computer* to do the work.

R.H. Windschitl, of St. Cloud, Minnesota, wins the prize, for a short, sweet program that runs a bit slower than Nhieu's but doesn't require partial results from manual examination.

Other entrants submitted programs in Pascal and C that, although they produced correct solutions, took longer to execute. Since the source files for these programs were considerably longer than Windschitl's and because they came from compilers (which ought to run considerably faster than the equivalent BASIC algorithm) rather than interpreters, I think Windschitl deserves the prize.

Here is what his program does (offering "apologies" to Jeffrey Zarkin):

He assumes that, for any set of positive numbers, the geometric mean (the *n*th root of the product) is less than or equal to the arithmetic mean (the sum divided by *n*, where *n* is the number of numbers). You can demonstrate the validity of that assumption by trying several sets of

The honorable mention from Montreal executes in less than two seconds.

numbers in this short program (in which *n* is 4):

```
10 INPUT A,B,C,D
20 S=A+B+C+D
30 P=A*B*C*D
40 PRINT "Geometric mean of product
   (";P;")=";P^(1/4)
50 PRINT "Arithmetic mean of sum
   (";S;")=";S/4
```

Given the sum of a set, you can place an upper limit on the product; likewise given the product, you can place a lower limit on the sum. The function *FN R(Q)* determines the maximum possible product of all four items, when the cost of one of the items equals *Q*, and compares it to the total.

If the actual product exceeds the theoretical maximum, obviously the corresponding cost cannot be part of any solution. Using the value *T*/4 gives the highest possible maximum product and serves as an anchor point for seeking the upper and lower limits in a binary search.

Lines 100–148 thus calculate the range within which all unit costs must lie.

Line 150 catalogs the costs in the valid range that also divide into the scaled total. (All costs must fit here, since their prime factors do.)

Line 160 forces the first cost to be odd since, the total being odd, at least one cost must be odd.

Since 64 divides into the scaled total, at least one other cost is a multiple of 4, and line 170 forces the second cost to fit that constraint.

Line 180 cancels the two just-determined costs from the two equations, arriving at $Y+Z=S$ and $Y*Z=P$. Substituting, we get $(S-Z)*Z=P$; thus, $Z\hat{}2-S*Z+P=0$.

Line 190 solves for the two remaining costs, eliminating negative money.

Line 200 sets *Z* equal to the larger of the two, while eliminating fractional pennies.

Line 210 determines the remaining cost as *S*–*Z*, ensuring that it is positive.

Line 220 prints the results. +

JULY'S WINNING PROGRAM

```
90   T = 675:M = T * 1E6
100  DIM C(99),B(1): DEF  FN R(Q) = M - Q * ((T - Q) / 3) ^ 3
110  B(0) = 0:B(1) =  INT (T / 4)
120  V =  INT ((B(0) + B(1)) / 2):B( ABS ( FN R(V) < 0)) = V
     IF B(0) + 1 < B(1) THEN 120
126  BO = B(0)
130  B(0) = T:B(1) =  INT (T / 4)
140  V =  INT ((B(0) + B(1)) / 2):B( ABS ( FN R(V) < 0)) = V
     IF B(1) + 1 < B(0) THEN 140
148  B1 = B(0)
150  C9 = 0: FOR X = BO TO B1:V = M / X
     IF V =  INT (V) THEN C9 = C9 + 1:C(C9) = X
158  NEXT
160  FOR W = 1 TO C9: IF C(W) =  INT (C(W) / 2) * 2 THEN 290
170  FOR X = 1 TO C9: IF C(X) =  INT (C(X) / 4) * 4 THEN 280
180  S = T - (C(W) + C(X)):P = M / (C(W) * C(X))
190  D = S * S - P * 4: IF D < 0 THEN 280
200  Z = (S +  SQR (D)) / 2: IF Z >  INT (Z) THEN 280
210  Y = S - Z: IF  ABS (Y) >  INT (Y) THEN 280
220  PRINT  CHR$ (7)"*"C(W)"\"C(X)"\"Y"\"Z
280  NEXT X
290  NEXT W
```

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ThinkTank's successor offers lots of extras.

MORE FOR YOUR MONEY

When Living Videotext released ThinkTank, the program didn't really fit into any existing software category. Sure, it was an outliner ("What's an outliner?" most people asked), but it was more. The ads said "idea processor"; reviewers tried phrases such as "hierarchical organizer"—all true, but no label really described it adequately.

Living Videotext has done it again with More. This new program is supposed to be more than an outliner, more than just an enhanced ThinkTank—the buzzwords this time are phrases such as "power outlining," "outline charting," and "desktop presentation."

Evolution of an Outliner

The core of More is ThinkTank 512, without some of that program's limitations and drawbacks. You can change fonts, sizes, and styles for headline levels; you can use standard editing techniques in headlines; standard window scrolling is the default mode; word-processing features in document windows are more powerful; sorting is no longer agonizingly slow; and you can have multiple windows open—up to six at a time, depending on the size of the outlines and the memory of your Mac. You can save More outlines in formats that are directly readable by other programs such as Word and Jazz, you can save any part of an outline as a separate document, and you can append any outline on a disk to the outline you're working on.

On the outlining level, More does more than address ThinkTank 512's shortcomings. It has a wealth of features for, well, power outlining (see figure 1). Features such as

- **Templates.** Any time you find yourself using the same group of headlines over and over—perhaps This Week followed by subheads for each of the days—you can add it to the Template menu. Selecting a template from the menu automatically puts all its headlines and subordinate information into the outline. When you install a template into the menu, it becomes a part of More, so it's there the next time you open the program.
- **Hoisting.** If you select a headline and "hoist" it, all of a sudden you'll be working in a new outline that begins with the hoisted headline. This technique is helpful for doing a lot of work on an initially minor headline that's buried someplace on the umpteenth level.
- **Promoting and Demoting.** You can promote the subheads of a selected headline to the same level as that of the headline—all the items subordinate to those subheads also shift a level. Alternatively, you can demote a list of same-level headlines so they all become subordinate to the one at the top of the list.
- **Cloning.** The program lets you make active copies of selected headlines and their subordinate topics. If you make any changes to the original or a cloned copy, all the clones are affected.
- **Mark and Gather.** You can select any headlines you want, no matter

where they are in the outline or how far apart they are. Once you've "marked" them (the leader characters turn into > signs), you can gather them together. You can gather the originals, copies, or clones and put them wherever you want them.

• **Calculate.** Any numbers in a group of subheads can be summed, with the total appearing in the headline over them. The numbers don't have to be alone in the subhead, so the program can handle statements such as gas . . . $22 in an expense list.

• **Search Options.** More's search-and-replace options are amazingly flexible. You can search with single and multicharacter wild cards, you can specify numeric or alphabetic ranges in the search string, and you can even replace the found string with the contents of the Clipboard.

Each of these features alone is powerful, but together they are incredibly versatile. For instance, More can do a Mark and Gather operation that searches for any headline with a dollar sign in it, clone the headlines under the heading Total Expenses, and perform the calculation for the total. Then you can hoist the expense headline and have the program search and replace to add .00 to every figure that has a whole-dollar amount. That's a lot of information reorganizing with only a few keystrokes.

Present your outlines in tree or bullet form with More, a powerful program that is loaded with options.

Tree Charts

More's two major new features both provide alternative ways of presenting information in outlines (see figure 2).

Tree charts put your headlines into boxes joined by lines that show their relationships. The chart design gives you lots of freedom, and it's all simple to do.

You construct tree charts in the Tree Chart window by using the icons along its side (see figure 3). With these icons you can select the shape of the boxes, the type of branch, and the thickness for both. You can add shadows to the boxes, choose justifications for the text in the boxes, and zoom in and out for partial and full views (the full view may span multiple pages).

The overall arrangement of the tree is adjustable too. You can have vertical or horizontal alignments, and you can start with the root and branch out or vice versa.

The Tree Size window lets you change the size of the boxes and the distance between them. As with so much else in More, you have a choice of methods: type in the sizes you want or manipulate the sample box directly. The Tree Options com-

ILLUSTRATION BY WARREN GEBERT

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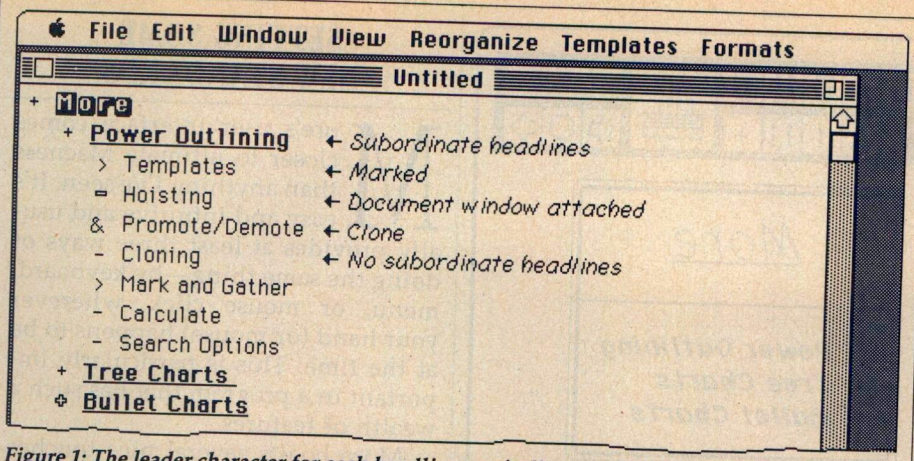


Figure 1: The leader character for each headline can indicate several different characteristics. Headline levels can have different styles, but font changes affect the entire document.

mand lets you choose the pattern the box is made from or filled with, and you can also use it to turn the background grid and window rulers on and off.

You can print tree charts right from More, but they can also be saved as editable MacDraw documents. And, interestingly enough, the program lets you copy and paste them into a document window so they'll show up in a bullet chart.

Bullet Charts

More's second special charting feature creates slidelike presentations of your outline information; unlike tree charts, bullet charts can display document windows attached to each headline.

Bullet charts can be designed strictly for printing—whether by an ImageWriter or LaserWriter or for transparencies depends on you—but you can also set them up as part of presentations that use the Mac itself as the slide projector.

A bullet chart can contain as much or as little of your outline as you want. To design the chart, you use a control bar on the bullet-chart screen. You can design the frame, choose from different fonts and styles for the text, adjust spacing and overall size, and define the labeling for the subheads in the chart (see figure 4).

If you're using a Mac to give a presentation, you can get rid of the control bar and the menu bar. You can leave the Mac on automatic or control the display of slides yourself. Because graphics pasted into document windows can be part of a bullet-chart presentation, your slide show doesn't have to be merely a series of bulleted text items. Also, because you can control the looks of the screen even when the controls themselves are invisible, your display design can change as you make the presentation—key phrases, for instance, can turn bold or italic when you want to emphasize them.

More Needs a Little More

It's hard to do More justice in an article this size; it needs a book to delve into all its features and their possible uses, although the manual does an admirable job of that. The program isn't perfect, though. It has three surprising omissions, one of which is potentially dangerous.

More's major shortcoming is its lack of an Undo command. Not so big a problem, you say? Well, when you can use Clear to get rid of something and it goes into oblivion instead of onto the Clipboard, and that something could be a headline with a dozen attendant subheadlines and text windows, you're talking major problem.

The other obviously missing features are a Delete command to erase outlines from disks (a minor annoyance) and true numeric sorting (a medium-size headache if you're working with numbers).

Printing Problems

More's nearly perfect user interface starts to break down when it comes to printing your outline. You have a lot of options, so you must make a lot of menu selections before you're ready to print. You start with Headlines and then Documents from the Format menu to set parameters for those items; next you need Print Options from the same menu to set headline labels, spacing, and so on; and still in the Format win-

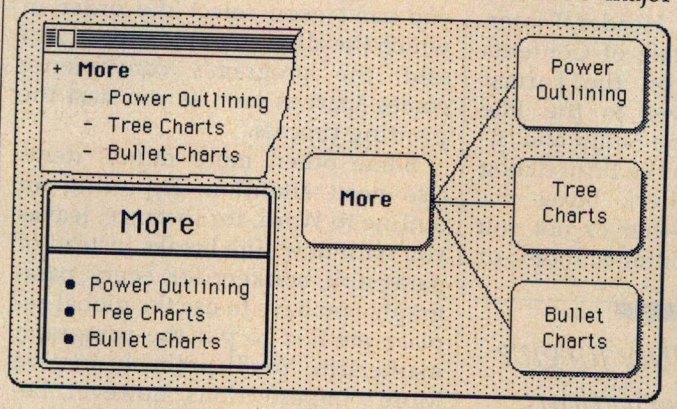
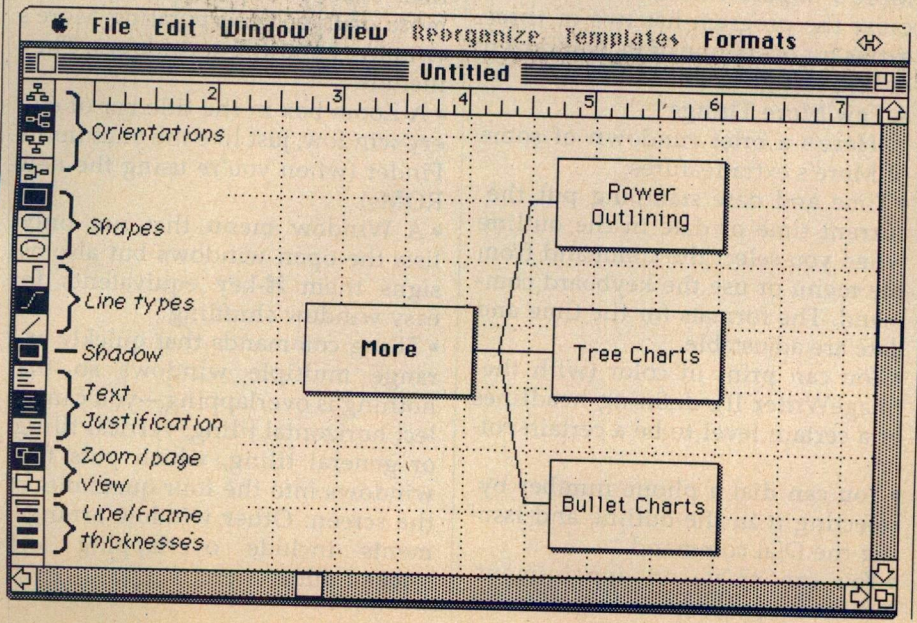


Figure 2: More lets you present outline information in different ways.

Figure 3: The Tree Chart window lets you use icons to control the overall look of the chart.



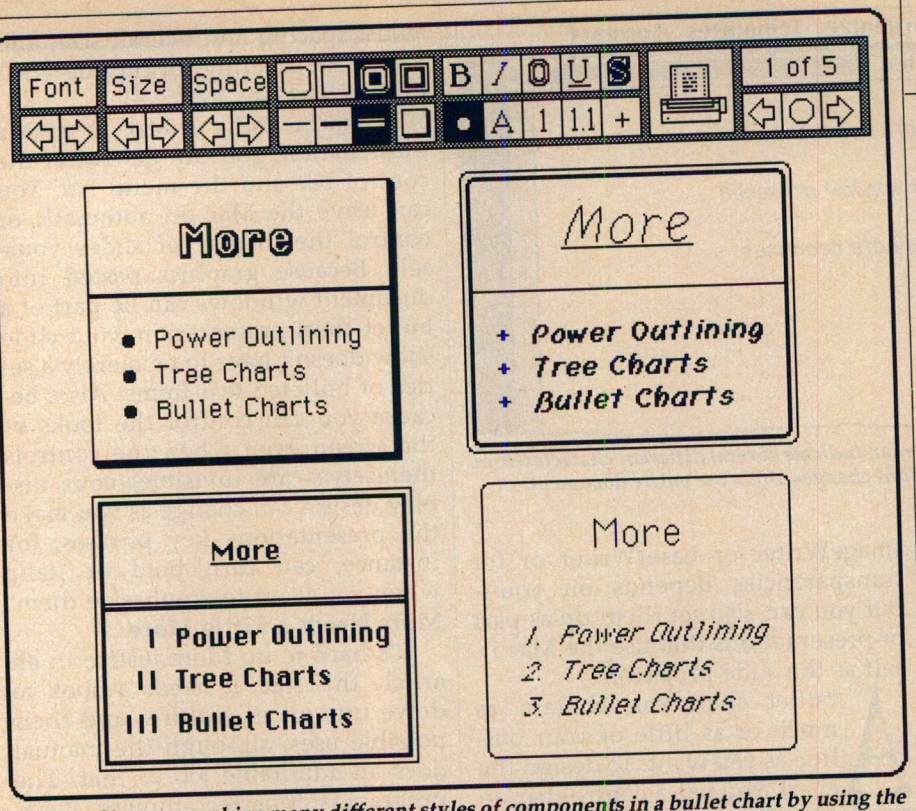


Figure 4: You can combine many different styles of components in a bullet chart by using the control bar. Bullet charts can be presented in slide-show fashion, automatically or manually, and can contain as little or as much of your outline as you want.

dow, you choose Header/Footer. (Color Print and Table of Contents are also available on the Format menu.) Moving over to the File menu, you need Page Setup and, finally, Print—and, in the Print dialog box you've got check boxes for things such as whether or not you want the table of contents, index, or headers/footers printed. There's certainly too much information for only one or two dialog boxes, but a better arrangement than the current one must be possible.

You'll probably forgive More's imperfections, because the program has two or three extras for every one of its oversights.

When you're getting ready to print, you notice another frustrating limitation. Headers and footers can include only the document (or headline) name, the date, and the page number. You can't place the header where you want it in the margin, either vertically or horizontally, and you can't even select the order in which the allowed items appear. As I said, the program's convenience comes apart as soon as you start the printing process.

Some other, more minor, items also need attention. Exporting an outline to Word, for instance, leaves you with new-line breaks instead of paragraph markers for every paragraph; you have to use the global-replace method to put the paragraph markers in. You'll probably forgive More's imperfections, however, because the program has two or three extras for every one of its half dozen or so oversights.

A Few More Things

Here's a brief rundown of some of More's extra features:

- Time and date stamping put the current time or date in the outline when you select the command from the menu or use the keyboard command. The formats for the time and date are adjustable.
- You can print in color (with the ImageWriter II), defining headlines of a certain level to be a certain color.
- You can dial a phone number by selecting it in the outline and issuing the Dial command.
- You can create an appointment outline by pulling out the calendar,

SETTING SOME NEW STANDARDS

More's user interface comes closer to ultimate Macness than anything I've seen. It's easy and intuitive and usually provides at least three ways of doing the same thing—by keyboard, menu, or mouse click, wherever your hand (or mouse) happens to be at the time. This is particularly important in a program that has such a wealth of features.

More boasts several nice touches that should be standard to all Mac software, features that at least ought to be present, even if the methods of using them vary.

- When you're opening a document—and a large More document can take a while, since it's all held in RAM—you get a visual indication (the document icon, gradually filling with black) of how much of the total is already loaded at any time, and you can cancel the loading process.
- Another filling icon appears when you're saving a document, although you cannot interrupt this process.
- When you're printing, a printer icon gradually fills to show how much of the printing is done so far and how much is left—the program has Pause and Cancel options.
- A Save All command in the File menu comes in handy when you have more than one document open. (Print All would be a nice addition.)

As more programs take advantage of Macs with new ROMs and more than 512K of RAM, we should see more of them incorporating More's window-handling techniques. They include

- A Zoom box in the title bar of every window, just like the ones in the Finder (when you're using the new ROMs).
- A Window menu that not only lists the open windows but also assigns them ⌘-key equivalents for easy window shuffling.
- Tiling commands that quickly arrange multiple windows so that nothing is overlapping—you can select horizontal tiling; vertical tiling; or general tiling, which puts four windows into the four quadrants of the screen. Other window arrangements include overlapping and stacked piles.

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This is the first time I've felt that a price tag of $295 was reasonable for any piece of software.

dragging across the dates you want, and entering the appointment-slot length you want (half hour, hour, and so on.) More turns your selections into outline form.

- You can switch between the ThinkTank-type "hot borders" and the standard scrolling windows.
- Certain menu commands simplify management of multiple windows (see "Setting Some New Standards," which accompanies this article).

This is the first time I've felt that a price tag of $295 was reasonable for any piece of software. Major software products don't often live up to their prerelease rumors and manufacturer's advertising hype; impress the more-jaded users in the Macintosh community (e.g., reviewers, editors, and software manufacturers); and receive a warm welcome from business users for its immediate utility in a variety of situations.

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Sharon Aker's most recent book is Mastering Microsoft Works *(COMPUTE! Books, 1986).*

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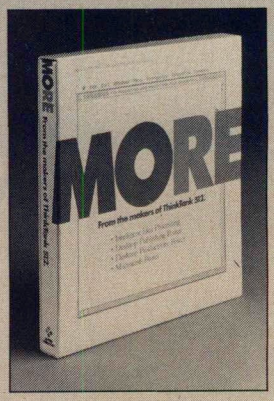

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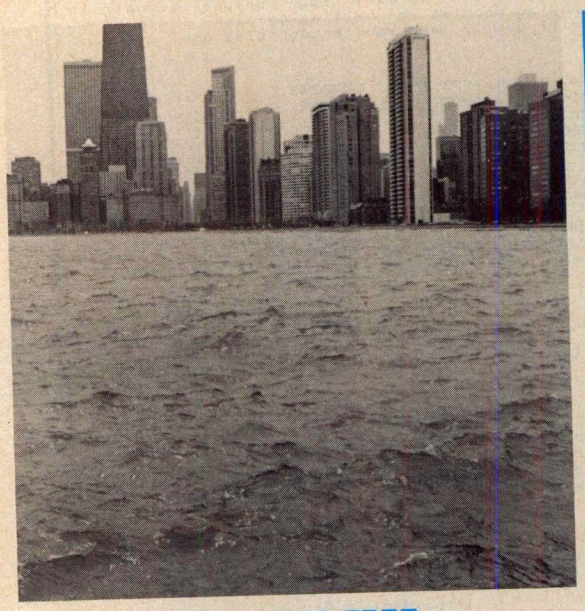

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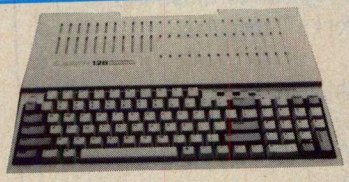

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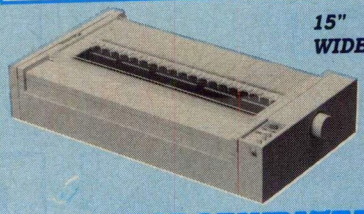

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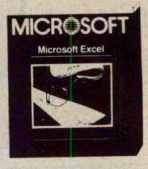

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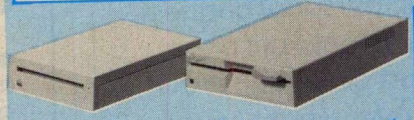

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Microsoft *Excel*	197.50*
▶**Microsoft** *Multiplan (DOS or CP/M)*	97.50*
Microsoft *For Macintosh: Word, File, Multiplan*	97.50*
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Microsoft *Chart for Macintosh*	62.50*
Monogram *Dollars & Sense*	55.00*
Monogram *Dollars and Sense for Mac Only*	71.99*
Satellite Software *Word Perfect*	72.00*
Sierra *Msc One Write:AR,GL,Cash Dis*	ea. 69.00*
Software Publishing *File/Report for Apple II*	68.00*
Software Publishing *Write or Graph*	68.00*
T/Maker *Click Art for Macintosh Only*	25.00*
United Software Industries *Ascii Express Pro*	64.75*

HARDWARE

(Please add shipping and handling charges found in italics next to price.)

COMPLETE SYSTEMS

Apple *Apple IIe, Apple IIc, Macintosh*	CALL	
AT&T *6300 PC CPU 2 128K/2 Floppy/1 Serial/1 Parallel*	$1,775.00*	(35.64)
▶**Central Point** *Laser 128*	355.00*	(7.67)
▶**Compaq** *DeskPro w/256K/1 Floppy/20MB Hard Disk*	1,775.00*	(43.18)
Compaq *Hard Disk Portable 256K*	1,800.00*	(38.88)
▶**IBM** *PC Base System with 256K 2DS/DD/FDC*	1,025.00*	(22.14)
▶**IBM** *PC Professional Hard Disk 256K/DS/DD/FDC/20MB Hard Disk*	1,337.00*	(31.77)
IBM *PC/AT Base System 1.2MB Floppy/256K*	2,204.00*	(47.61)
Toshiba *T1100+Laptop Computer w/256K 2 Floppies/1 Ser/1Par/MS-DOS*	1,341.00*	(26.82)

DISK DRIVES & CONTROLLERS

Apple *Macintosh Add On Drive*	283.95*	(6.13)
Apple *20MB SCSI Hard Disk for Apple IIe or Mac*	924.00*	(19.96)
Apple *Unidisk 3.5"w/accesory kit*	$319.00*	(6.89)
DC Systems *Easy Drive 20MB Mac Hard Disk*	650.00*	(14.04)
IOmega *5MB Macnoulli*	620.00*	(27.00[illegible]
IOmega *Dual 10MB Bernoulli*	1,700.00*	(46.44)
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Micro-Sci *Floppy Controller Subsystem for Macintosh*	65.00*	(2.50)
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Paradise *20MB Hard Disk Subsystem for Macintosh*	745.00*	(16.09)
PC Network *Apple IIc External Drive*	95.00*	(5.00)
▶**PC Network** *Apple IIe Disk Drive*	85.00*	(1.84)
PC Network *800KB Mac DS/DO Drive*	185.00*	(4.00)

MODEMS

Anchor *Lightning 2400*	$309.00*	(2.50)
Anchor *Signalman Express*	205.00*	(5.00)
Hayes *Micromodem IIe/Smartcom*	125.00*	(2.50)
Hayes *Smartcom II for the Mac*	78.00*	(1.50)
Hayes *Smartmodem 1200*	340.00*	(5.00)
Hayes *Smartmodem 2400*	525.00*	(5.00)
Novation *Apple Cat II*	174.45*	(2.50)
Prometheus *ProModem 1200 with Mac Pac*	247.00*	(6.00)
	253.00*	(6.00)
▶**Prentice** *Pop Com w/MacPac 1200 Baud Modem, Cable, Straightalk*	215.00*	(2.50)
U.S. Robotics *Courier 2400BPS*	345.00*	(5.00)
U.S. Robotics *Password 1200BPS*	172.00*	(2.50)
Zoom *Modem IIe*	95.00*	(2.05)
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▶**THE™ 1200 COM External**	119.00*	(5.00)
▶**THE™ 2400 COM External**	259.00*	(5.00)

MONITORS

Amdek *Video 300G Composite*	$110.00*	(3.00)
Amdek *Video 300A Composite*	120.00*	(3.00)
Amdek *Color 600 RGB*	365.00*	(3.00)
Apple *NEW! Super Color IIe*	259.00*	(2.55)
Apple *Color Monitor IIc*	259.00*	(2.55)
▶**Magnavox** *14" Color RGB 640x280*	250.00*	(5.94)
Princeton *HX-9 9" RGB Monitor*	365.00*	(3.00)
Princeton *HX-12 RGB Monitor*	369.00*	(6.00)
▶**Taxan** *620-U High Res Color*	359.00*	(3.00)

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Quadram *Multicore 1 Parallel, 1 Serial, Clock, Expandable to 256K*	140.00*	(2.50)
Quadram *MP-8K Microfazer Buffer (Expandable)*	110.00*	(2.50)
Quadram *eRAM-80COL w/64K*	88.00*	(2.50)
Street Electronics *ECHO II Speech Synthesizer*	85.00*	(2.50)
Titan Technologies *Accelerator IIe*	207.35*	(2.50)

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Apple *Imagewriter II 80COL/200CPS NLQ Color*	419.00*	(9.07)
▶**Apple** *LaserWriter*	3,520.00*	(75.00)
▶**Citizen** *MSP-10 160CPS/80COL*	259.00*	(5.59)
▶**Citizen** *MSP-15 160CPS/132COL*	340.00*	(7.34)
▶**Citizen** *120D 10" Par/4K Buf. w/Trac*	169.00*	(3.65)
Citizen *Premiere 35 35 CPS Daisywheel 132COL/Fric + Trac*	420.00*	(9.07)
Epson *LX-8C 120/16CPS 8.5" w/NLG*	219.00*	(4.73)
Epson *FX-85 160CPS/80COL*	355.00*	(7.45)
Epson *FX-286 200CPS/132COL*	440.00*	(9.50)
▶**Epson** *LQ-1000 180CPS/60CPSNLQ*	699.00*	(15.10)
Epson *DX-35 Daisywheel Printer 35CPS/132COL/True Letter Quality*	590.00*	(12.74)
NEC *2030 20CPS Letter Quality*	605.00*	(13.00)
NEC *3530 33CPS Letter Quality*	690.00*	(14.90)
▶**Okidata** *ML-182 NEW! 120/CPS LQ Model/Fric*	CALL	
▶**Okidata** *Color 20 80CPS/100 LQ Model/Epson Graphics (Requires Interface)*	CALL	
▶**Okidata** *ML-192/AP Sleek Design 160 CPS LQ Model/Fric/IBM Graphics*	CALL	
Okidata *ML-193P 132COL/160CPS*	CALL	
Panasonic *KX-P1091 120/75/22CPS 10" Parallel w/Tractor*	220.00*	(4.75)
Panasonic *KX-P1092 180CPS 12" Parallel w/Tractor*	304.85*	(6.58)
▶**Toshiba** *P341 132COL/216CPS*	699.00*	(15.10)
Toshiba *P351 132COL/288CPS*	959.00*	(21.34)

ACCESSORIES

Apple *IIc Mouse w/mouse paint*	$69.00*	(1.49)
▶**Assimilation Process** *MacTurbo*	73.50*	(2.50)
▶**3.5" Macintosh Diskettes w/Free Flip 'n' File**		
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Curtis *Ruby Surge Protector*	39.00*	(1.50)
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Hayes *Mach III Joystick w/Fire Button*	26.50*	(1.50)
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Mac Too! Indicates the Mac version is available at the same price.

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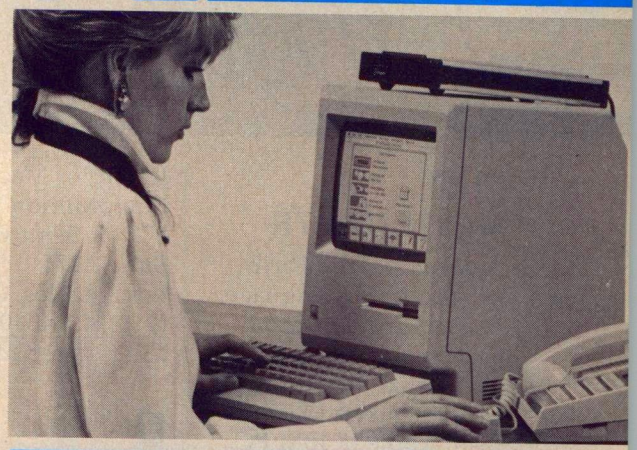

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MASTERFORTH

A version of the Forth programming language, MasterForth lets programmers write programs that can run unchanged on Macintosh, Apple II, IBM PC, and Commodore 64 computers. This version of Forth exactly matches the Forth-83 standard described in the book *Mastering Forth* (Brady, 1984), which is also included in the package. MasterForth provides a complete programming environment, including a macro assembler and full file interface. It also features a string package, screen editor, and resident debugger and lets programmers use relocatable utilities and transient definitions. Users can optimize programs with an optional target compiler. *(List Price: $125)*

Requires: Apple II Plus, IIe, IIc, or Macintosh

MicroMotion
8726 S. Sepulveda Blvd.
Suite A171
Los Angeles, CA 90045
(213) 821-4340

CIRCLE READER SERVICE NO. **400**

WALT DISNEY PRODUCTIVITY SOFTWARE

Bantam Electronic Publishing has released Walt Disney Comic Strip Maker and Walt Disney Card & Party Shop, two programs with which children ages 7 and up can create their own stationery, party items, and comic strips using their favorite Disney characters.

Walt Disney Comic Strip Maker lets users transpose, crop, mix, and match selections of 180 high-resolution color graphics of Disney characters as well as assorted objects and backgrounds. Users can build comic strips by filling balloons with original or preprogrammed phrases, branch stories by selecting frames, or create strips from scratch.

Walt Disney Card & Party Shop offers more than 45 preprogrammed designs and a choice of Disney characters and objects with which users can make personalized stationery and party goods. More than 100 color graphics include characters in several poses, assorted decorations, and a variety of typefaces. The package also includes three preprogrammed party sets that can print everything for an Alice in Wonderland, Winnie the Pooh, or Mickey and friends party theme.

Both programs contain an easy-to-use art toolbox and a built-in word processor. *(List Price: $39.95 each)*

Requires: Apple II Plus, IIe, or IIc; 64K RAM

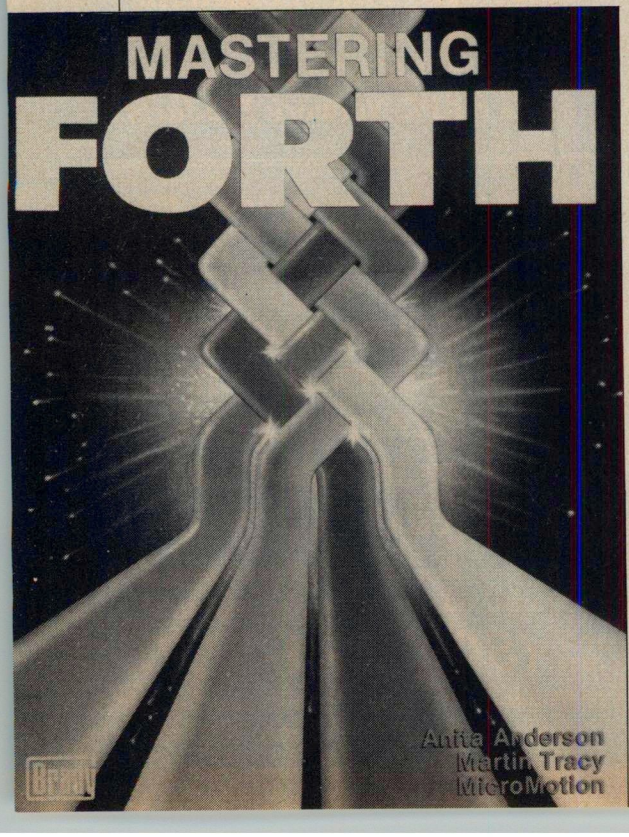
Bantam Electronic Publishing
666 Fifth Avenue
New York, NY 10103
(212) 765-6500

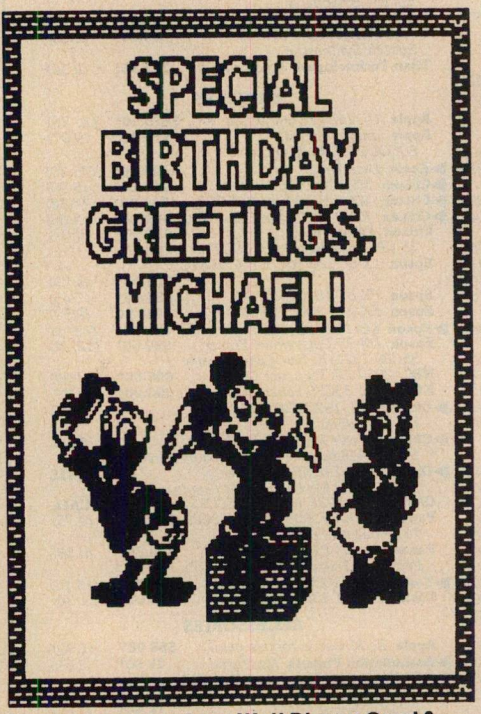
CIRCLE READER SERVICE NO. **401**

ELECTRIC DREAMS

Activision has released the first three products in its Electric Dreams line, which is designed to bring the best in entertainment software from around the world to the U.S. The first titles—The Rocky Horror Show, Spindizzy, and Zoids—are from England.

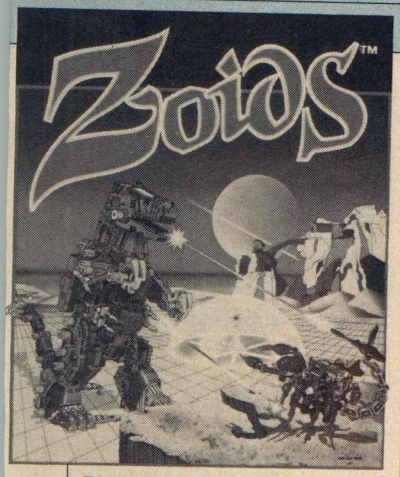
The game The Rocky





A sample screen from Walt Disney Card & Party Shop from Bantam

MasterForth lets programmers write programs that can run unchanged on the Mac, Apple II, IBM PC, and Commodore computers.

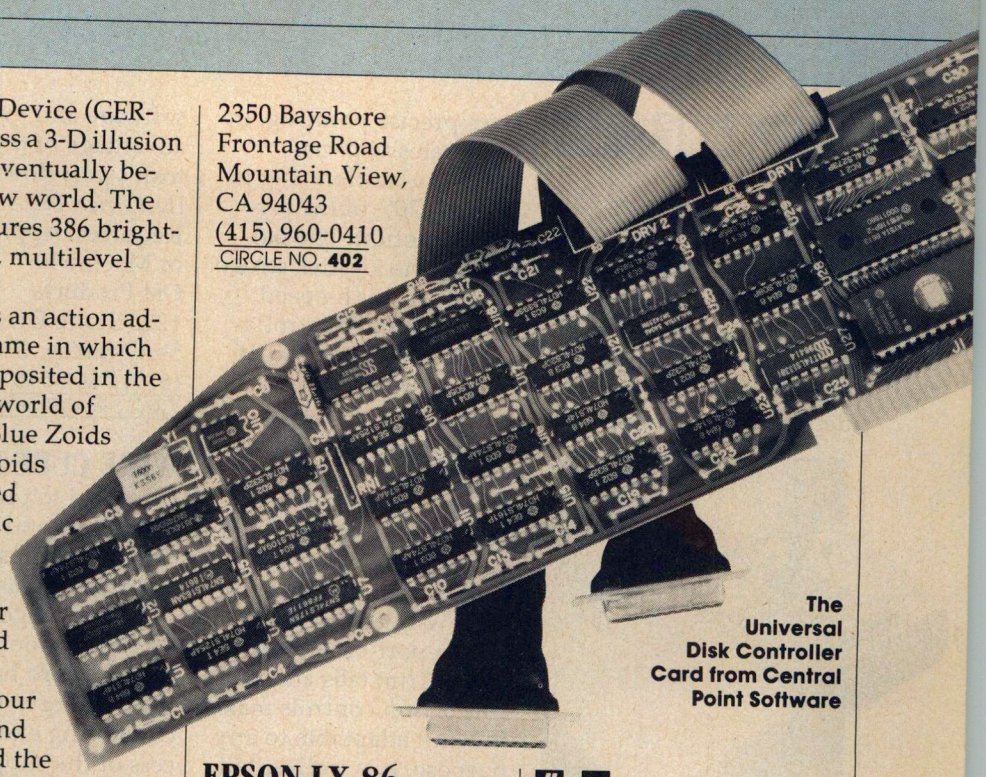


Zoids from Activision

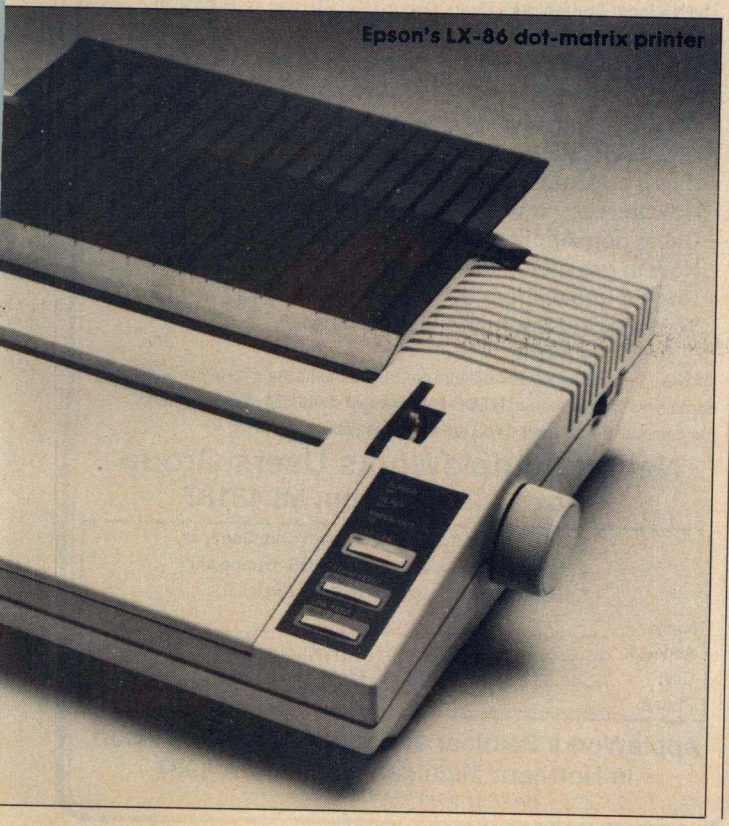
Horror Show is based on Richard O'Brien's story and contains all the main elements and characters from the story's movie version, including the theme song, "The Time Warp Dance."

Spindizzy is a 3-D action/arcade game in which you journey to a distant planet, guiding your gyroscopic Geographic Environmental Reconnaissance Land Mapping Device (GERALD) across a 3-D illusion that will eventually become a new world. The game features 386 brightly colored, multilevel screens.

Zoids is an action adventure game in which you are deposited in the unsettled world of Zoidstar. Blue Zoids and Red Zoids are engaged in a galactic war, with the Red Zoid leader determined to destroy Zoidstar. Your task is to find and rebuild the Mighty Zoidzilla, a machine you can use to defeat the Red Zoid leader. *(List Price: $34.95 each)*
Requires: Apple II Plus, IIe, or IIc; 64K RAM
Activision, Inc.
2350 Bayshore Frontage Road
Mountain View, CA 94043
(415) 960-0410
CIRCLE NO. **402**



The Universal Disk Controller Card from Central Point Software



Epson's LX-86 dot-matrix printer

EPSON LX-86 PRINTER

Designed for small-business and home use, the LX-86 is an 80-column, 9-pin dot-matrix printer that prints at 120 cps in draft pica mode and at 16 cps in near-letter-quality (NLQ) mode. It offers both bidirectional and unidirectional printing. Its SelecType panel allows push-button selection of draft and NLQ modes and activates many popular typestyles, including compressed, italic, elite, and double-strike. The LX-86 also has a 1K buffer memory, expandable to up to 32K with optional interface boards. Optional tractor and cut-sheet feeders are available. *(List Price: LX-86, $349; 32K buffer board, $175; tractor feed, $34.95; cut-sheet feeder, $69.95)*
Epson America, Inc.
2780 Lomita Blvd.
Torrance, CA 90505
(800) 421-5426
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CIRCLE READER SERVICE NO. **403**

II SERIES MAC

UNIVERSAL DISK CONTROLLER CARD

The Universal Disk Controller Card can connect virtually any drive made for an Apple II or Macintosh computer to an Apple II Plus or IIe. The card combines the functions of a 3½-inch and 5¼-inch controller, allowing connection of 5¼-inch disk drives, UniDisk 3.5, and Macintosh-compatible 400K and 800K drives in any combination. Disks created in an Apple UniDisk will work with a Macintosh-compatible drive connected to the card and vice versa. Users can connect two different drive types to the card simultaneously. *(List Price: $150)*
Requires: Apple II Plus, IIe, or Macintosh
Central Point Software
9700 S.W. Capitol Highway
Suite 100
Portland, OR 97219
(503) 244-5782
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Pipeline

HARDWARE

II SERIES MAC

MACH IV JOYSTICK

From CH Products comes a new advanced, intelligent joystick called the MACH IV. The device's design, which emphasizes precise pointing, incorporates a special precision-motion ring in the first 20% of the joystick's motion. The balance of the joystick stroke involves a high-speed ring for rapid controllable motion. The MACH IV's control chip senses when the user is slowing down. The joystick then brakes to prevent overshoot. At a flick of a switch, the MACH IV becomes a multibutton game joystick ready to operate with any game or game-port-based software. Trim tabs and variable action controls make the unit adaptable to any purpose. It is well suited for use with all Apple game-port and mouse software and even takes advantage of the Macintosh's pull-down menus. *(List Price: $89.95 and up)*

The MACH IV joystick

Requires: Apple IIe, IIc, or Macintosh
CH Products
1225 Stone Drive
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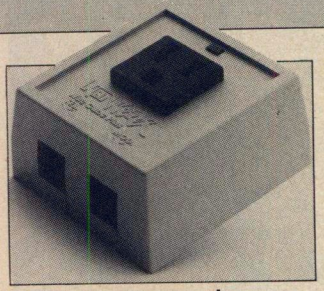

The surge-suppression device Wire Cube Plus

This extinguishes the pilot LED, indicating that the circuit has been tripped. The single-outlet device safeguards any equipment powered directly from wall outlets, absorbing transients within nanoseconds. *(List Price: $39.95)*
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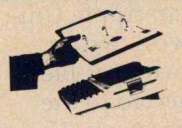

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HAVE YOU SEEN OUR AppleWorks NEWSLETTER?

The **National AppleWorks Users Group (NAUG)** is an association of AppleWorks users. **NAUG** members share information, hints, suggestions and ideas about AppleWorks through a monthly newsletter. Here is a partial list of articles that appeared in the October issue of the ***Forum***:

- **What's in the new version of AppleWorks?**
- **How to get italics in your printouts.**
- **Using a memory expansion card as a RAM disk.**
- **How to recover when AppleWorks locks up.**
- **Using non-Apple printers with AppleWorks.**
- **How to get multiple levels of sorting with "Arrange".**
- **Do you know about this spreadsheet bug?**
- **Tricks using the Apple-Q command.**
- **...And lots more.**

NAUG shares an electronic bulletin board and maintains a library of public domain disks. A one-year **NAUG** membership costs $24. We will refund the balance of your dues if you are ever dissatisfied.

National AppleWorks Users Group
Box 87453, Canton, MI 48187

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AppleWorks Seminar at Shanty Creek Ski Resort in Northern Michigan, Jan. 24-27, 1987

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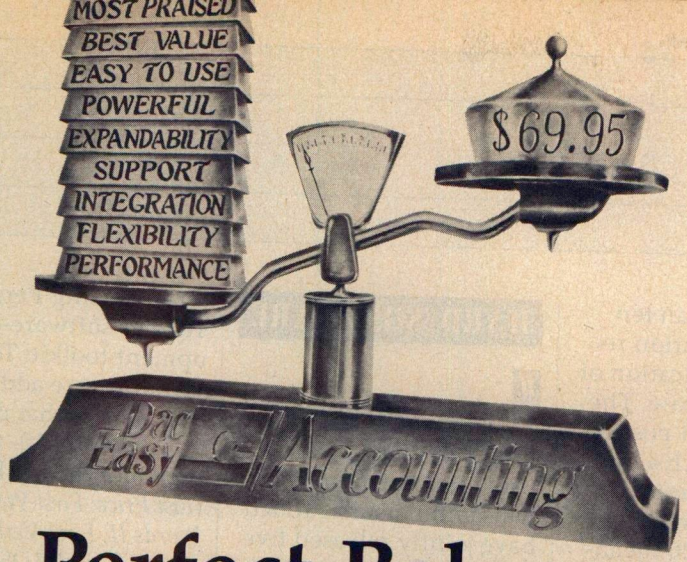
CIRCLE 180 ON READER SERVICE CARD



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Journal of Financial Computing, 1985*

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- Automatic budgeting by department
- Unlimited journals and departments
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Accounts Receivable
- Open invoice or balance forward per customer for unlimited number of customers
- Multi-sorted mailing labels
- Statements and invoices support special comments
- Detailed history for three years for number of invoices, sales, cost, and profits
- Customized aging report
- Automatic sales forecasting

Accounts Payable
- Checks handle multiple invoices, unlimited allocations and cash available protection
- Multi-sorted vendor labels and directories
- Customized aging report
- Automatic forecasting of purchases

Inventory
- Average, last purchase, and standard costing
- Physical inventory with perpetual comparisons
- Accepts fractional measure such as dozens
- Automatic forecasting of product needs
- Automatic forecast of product sales
- Detailed three-year history for every product
- Alert and activity reports
- Screen inquiry for on-hand/on-order/sales/cost/profit/turns/GROI/etc.

Purchase Order
- Inventory and non-inventory items
- Allows up to 99 lines
- Per line discount in %
- Accepts generic deductions
- Accepts back orders and returns
- Purchase journal

Billing
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- Prints sales journal
- Allows return credit memo

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*IBM version reviewed.

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Minimum hardware requirements
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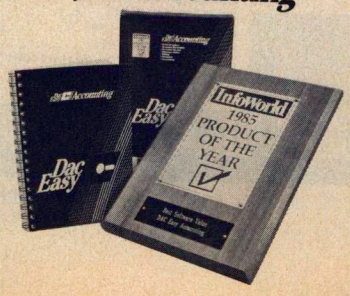

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MAC

DATAPORT

DataPort, a SCSI port designed for the Macintosh 512, is now available from SuperMac Technology. DataPort plugs into the computer's existing ROM sockets and can be installed in less than ten minutes. Installation requires no modification of the computer's case. The product makes it possible for users to attach a hard-disk drive that uses the SCSI interface, such as the company's 20-megabyte DataFrame, to their computers. *(List Price: DataPort, $299 ($99 with DataFrame); DataFrame, $1299)*

The 20-megabyte DataFrame from SuperMac Technology

Requires: Macintosh, 512K RAM

SuperMac Technology
950 N. Rengstorff Avenue
Mountain View, CA 94043
(415) 964-8884

CIRCLE NO. **409**

HARD/SOFTWARE

//SERIES

TOUCH-SCREEN SOFTWARE

Laureate Learning Systems and Personal Touch have jointly released five special-education software packages that let students interact with their computers by touching the screens. Developed by Laureate, the five programs are First Words, First Words II, and First Verbs for developing and testing early vocabulary; the Microcomputer Language Assessment and Development System (Micro-LADS), a seven-disk product that teaches fundamental syntactical rules; and Learning Left and Right, which covers left/right discrimination concepts.

The applications were interfaced to touch screens using Personal Touch's software-development toolkit. TouchWindows are add-on peripherals that users can attach to any 10- to 15-inch monitor with Velcro. *(List Price: First Words, First Words II, First Verbs, $200 each; Micro-LADS, $750; Learning Left and Right, $150; Personal Touch Toolkit, $49.95; TouchWindows, $199.95)*

Requires: Apple II Plus, IIe, or IIc; 48K RAM (except for Learning Left and Right—64K RAM); TouchWindows

Laureate Learning Systems, Inc.
110 East Spring Street
Winooski, VT 05404
(802) 655-4755
or
Personal Touch Corp.
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San Jose, CA 95129
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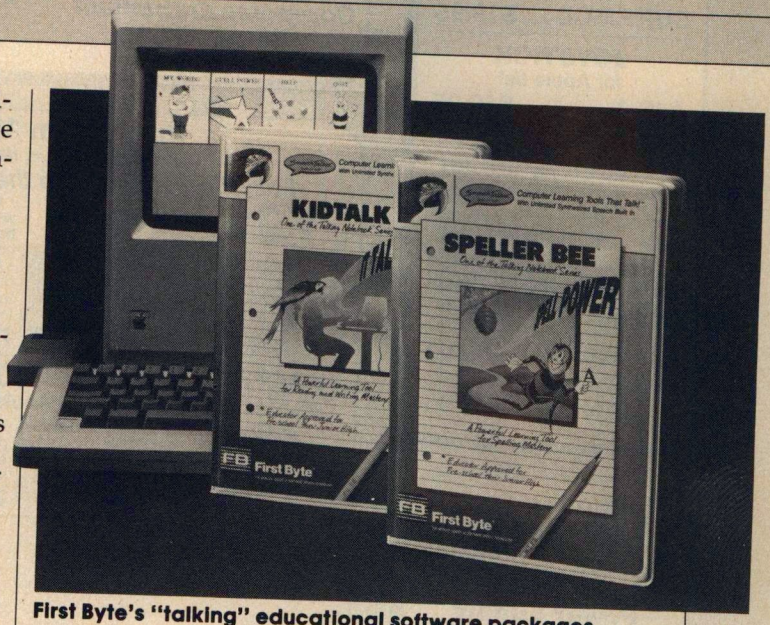
SOFTWARE

MAC

'TALKING' EDUCATIONAL SOFTWARE

First Byte has released two series of "talking" educational software for the Macintosh. Now available are Speller Bee, KidTalk, and MathTalk in the Talking Notebook Series and First Shapes, the initial title in the Building Blocks for Learning Series. Both series use the company's SmoothTalker speech technology to provide self-contained, unlimited text-to-speech capabilities.

Speller Bee helps children improve their spelling by providing practice routines, games, and simulated test situations. Preschool children can improve word-recognition skills, and children up to junior-high level can increase their vocabulary. The program contains 150 prestored spelling words, and users can also enter up to 32 lists of their own, each of which can contain 10 words of up to 15 letters. The program's Bee Prepared section provides practice exercises in which children can see and hear each word and then type it, and its Bee Games section offers the games Scramble, Search, and Detective. Children can also take a spelling test in which the program says a word and the student types it.



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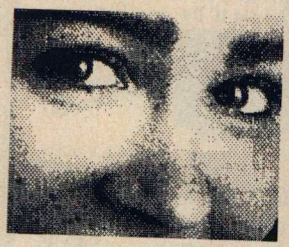

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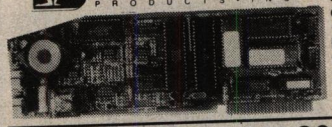

• **NEW, single card version** • Built-in software in ROM • Comes with ProCom-A disk-based communications software • Hayes compatible • Compatible with ProDOS • Auto-dial/Auto-answer • Auto redial on busy • Built-in speaker and volume control • 2 phase jacks with exclusion switching • 2-year warranty

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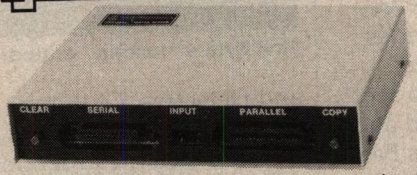

The UBUFFER Universal Printer Buffer will save you valuable computer time because your computer can send data to the UBUFFER much faster than your printer can accept and print it. Its dual port feature allows you to take data from either a serial or parallel port on a computer, and send data to either an RS232C serial or Centronics parallel printer. There are four possible combinations: 1) Serial to Serial, 2) Serial to Parallel, 3) Parallel to Parallel, 4) Parallel to Serial.

THREE NEW FEATURES! • **Cut sheet feeding** • **Software selectable output** • **Modem support** • Switch-selectable baud rates (serial) • Ready light • Copy button • Clear button • Weight: 2 lbs. • Manual included

UB64K 64K Universal Printer Buffer. $199.95

UB256K 256K Universal Printer Buffer. $239.95

64K/256K Parallel Printer Buffer

• Standard Centronics parallel printer buffer • 9VAC adapter included • Size: 9⅛"L x 4⅛"W x 1½"H • Weight: 2 lbs. • Manual included

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PB-256K 256K Parallel Printer Buffer. $149.95

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**When using CP/M, the JE860 and JE868 will only function with Version 2.20 or earlier; PASCAL (JE868) Version 1.1 or earlier.

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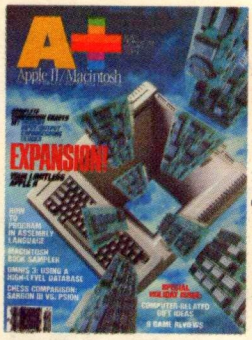

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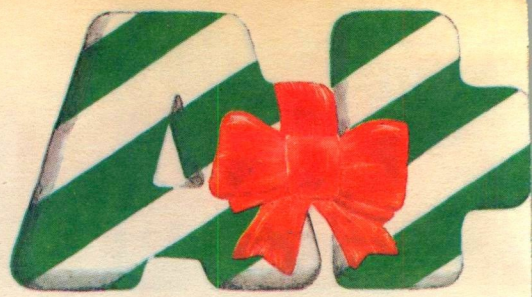

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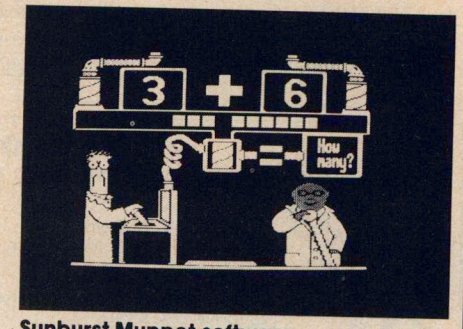
MathTalk improves children's mastery of the basic computational skills of addition, subtraction, multiplication, and division. Children can enter their own problems and receive spoken and graphic help from Professor Matt A. Matics. The program provides tutorials, test simulations, and games in several learning modules.



Sunburst Muppet software

First Shapes introduces geometric shapes. Children can use the software without knowing how to read instructions, with the help of the talking character Ted E. Bear. Learning modules include Shapes, in which children name shapes and can change their size; The Toy Factory, in which they can use shapes to build toys; The Toy Box, in which they can store toys; and The Toy Fair and Make a Match Game, in which they use their skills in games. Finally, Helper lets adults set up individualized learning activities for each child. *(List Price: Speller Bee, KidTalk, MathTalk, $79.95 each; First Shapes, $59.95)*
Requires: Macintosh
First Byte, Inc.
2845 Temple Avenue
Long Beach, CA 90806
(213) 595-7006
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SUNBURST MUPPET SOFTWARE

Sunburst Software has released two new educational programs—Muppetville and Muppet Word Book—that feature Muppet characters and are designed for use with Muppet Learning Keys. For use in preschool through first grade, the programs include a disk, backup disk, and teachers' guide. Also available are computer lab packs, which each contain ten program disks. The programs are compatible with the AppleMouse and Touch Window.

In Muppetville students guide Kermit on his unicycle toward six neighborhood establishments, and in the process they learn about towns and develop a sense of direction. The program is intended to develop children's math skills by encouraging them to dis-

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See your software dealer for SPACE CAMP scholarship guidelines, or write direct to the address above.

CIRCLE 146 ON READER SERVICE CARD

criminate shapes and musical tones; sort and classify by shape, size, and color; determine similarities and differences among objects; learn one-to-one correspondence; and learn to count using single-digit numbers.

In Muppet Word Book children learn about letters and words, distinguishing between uppercase and lowercase, connecting uppercase and lowercase versions of the same letter, recognizing beginning consonants of words, and combining word endings and beginning consonants to form words. The program includes an easy-to-use word processor with which students can type their own names and messages. The word processor has room for eight characters across and four lines down. *(List Price: $59 each; lab package, $177 each)*

Sunburst Muppet software

Requires: Apple IIe or IIc, 64K RAM

Sunburst Communications, Inc.
39 Washington Avenue
Pleasantville, NY 10570
(800) 431-1934
In NY (800) 221-5912
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MAC

MACKIDS SERIES

Nordic Software has released ShapeWorks and CoinWorks, the first two programs in its MacKids series of educational activity packages for the Macintosh. Both programs let users print worksheets for traditional pencil-and-paper use.

Designed for preschool-aged children, ShapeWorks contains 13 lesson combinations that help children distinguish between different shapes, patterns, and sizes. Children can also learn the names of shapes by listening and seeing the name printed on the screen.

For children in the early stages of elementary school, CoinWorks is a collection of seven different lessons that teach children how to deal with coins. The mouse-driven lessons cover such topics as deciding if sufficient funds are available to make a purchase, making a purchase with the fewest coins, and giving change. *(List Price: $34.95 each)*

Requires: Macintosh

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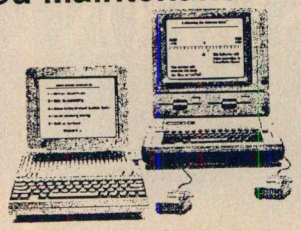

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BIBLIO-LINK

Personal Bibliographic Software has introduced a series of Biblio-Link programs for the Macintosh. The programs are designed to transfer records downloaded from on-line services such as the Bibliographic Retrieval Service (BRS), DIALOG, and the National Library of Medicine's Medlars, to the company's Professional Bibliographic System. The latter is a specialized database-management system that can handle up to 30,000 bibliographic records and produce correctly formatted bibliographies. Biblio-Link analyzes the fields of downloaded records and extracts the information that the Professional Bibliographic System needs. *(List Price: $195 each)*

Requires: Macintosh, Professional Bibliographic System

Personal Bibliographic Software, Inc.
P.O. Box 4250
Ann Arbor, MI 48106
(313) 996-1580

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II SERIES

CROSSWORD CREATOR

Crossword Creator is a complete package that lets users design, edit, store, and print crossword puzzles. A menu-driven format and window-menu display make the program easy to use. Users can enter up to 20 words and clues for each puzzle and can store up to 100 puzzles on each disk. They can also choose between manual or automatic puzzle generation and can produce an answer key for any puzzle. The puzzle and instructions appear on the screen at all times during puzzle development, and an error-checking routine eliminates users' input errors. *(List Price: $29.95; sample disk, $6.95)*

Requires: Apple II Plus or IIe, one disk drive, printer

DEC Computing
5307 Lynnwood Drive
West Lafayette, IN 47906

CIRCLE READER SERVICE NO. **425**

II SERIES

MECC SOFTWARE

The Minnesota Educational Computing Corporation (MECC) has released a new educational package called Clock Works.

Clock Works is a math package designed to teach children in grades 1–3 how to tell the time using both analog and digital clocks. The package features colorful graphics, realistic clocks, and animation to provide drills and practice in reading and setting clocks. It also includes a special "clock factory" that lets students design some unusual alarm clocks and has easy-to-use options that let teachers adjust exercises to suit children's abilities. *(List Price: $49)*

Requires: Apple II Plus, IIe, or IIc; 64K RAM

Minnesota Educational Computing Corp.
3490 Lexington Avenue North
Saint Paul, MN 55126-8097
(612) 481-3500

CIRCLE READER SERVICE NO. **426**

II SERIES

SCHOOL SOFTWARE

K–12 MicroMedia Publishing has released two software series for schools—SchoolWorks, a series of templates for use with AppleWorks, and Microstats, a series of programs for managing sports statistics.

Three SchoolWorks packages are available—Teacher, Office, and Athletic Director. Each double-sided disk contains numerous templates and documentation. Users can move easily among any template applications with just a few keystrokes. Example templates are Gradebook; Outline, which helps teachers rewrite courses; Purchase Order; and Calendar.

Microstats programs are Basketball, Football, Baseball/Softball, and Volleyball. Each menu-driven program computes averages, percentages, and totals automatically and creates a team data disk on which it stores team statistics for up to 99 players and 50 games. *(List Price: SchoolWorks, $55 each, $99 for two, $125 for three; Microstats, $99 each, $325 for four)*

Requires: Apple II, 48K RAM (SchoolWorks) or 128K RAM (Microstats), AppleWorks (SchoolWorks), one disk drive, printer

K–12 MicroMedia Publishing, Inc.
6 Arrow Road
Ramsey, NJ 07446
(201) 825-8888

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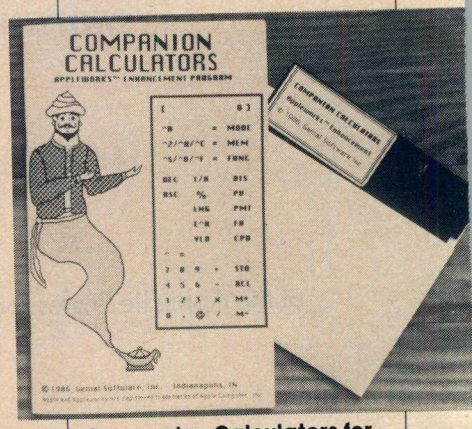
II SERIES

COMPANION CALCULATORS

Designed to enhance AppleWorks, Companion Calculators contains several calculators, each with specialized functions. Users can install the product



Companion Calculators for AppleWorks

on their AppleWorks start-up disk, and the calculators then load into memory automatically when they boot AppleWorks.

The calculators are Financial Calculator, which includes common financial functions for spreadsheet users; Hexadecimal Calculator, which contains hexadecimal and binary number systems; Multifunction Standard Calculator, which contains common arithmetic functions; and Programmer's Calculator, a flexible aid for programmers using Applesoft BASIC. *(List Price: $14.95)*

Requires: Apple IIe or IIc, 128K RAM, ProDOS, 80-column card, AppleWorks

Genial Software, Inc.
P.O. Box 20281
Indianapolis, IN 46220
(317) 251-4721

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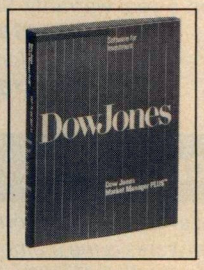

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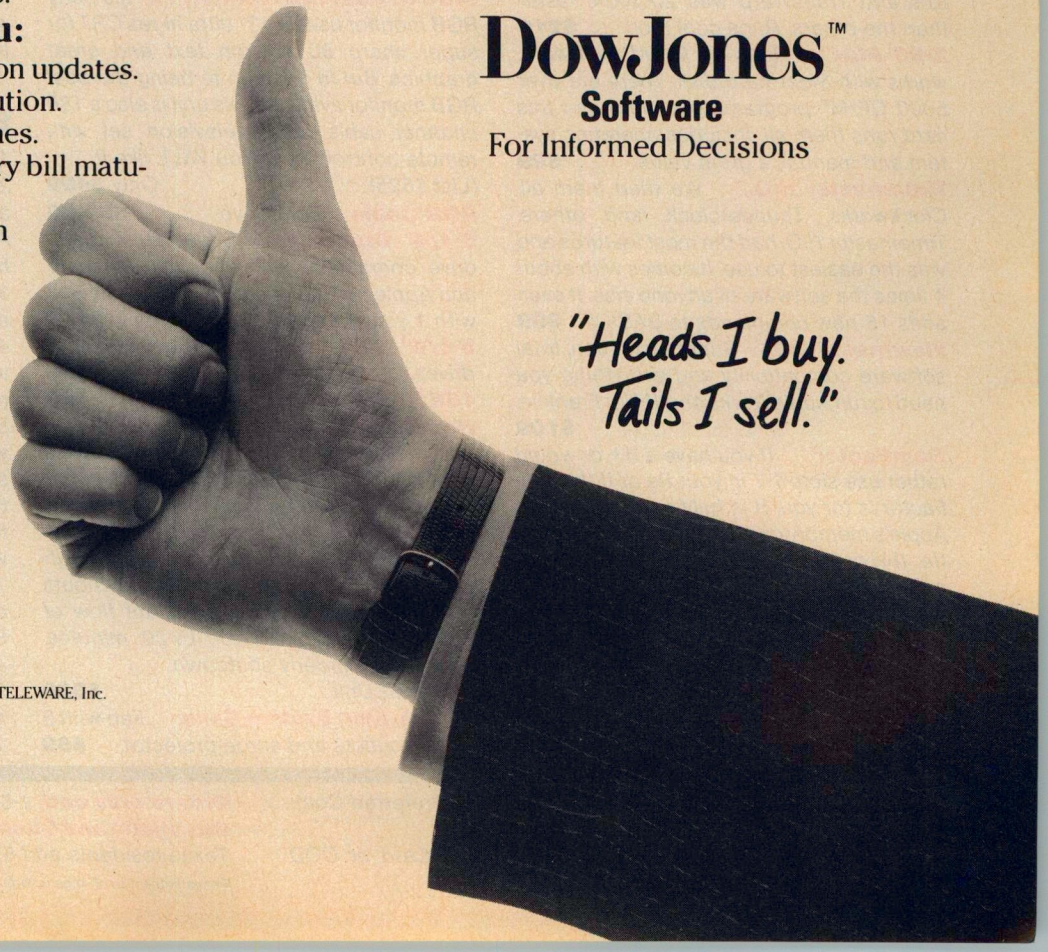

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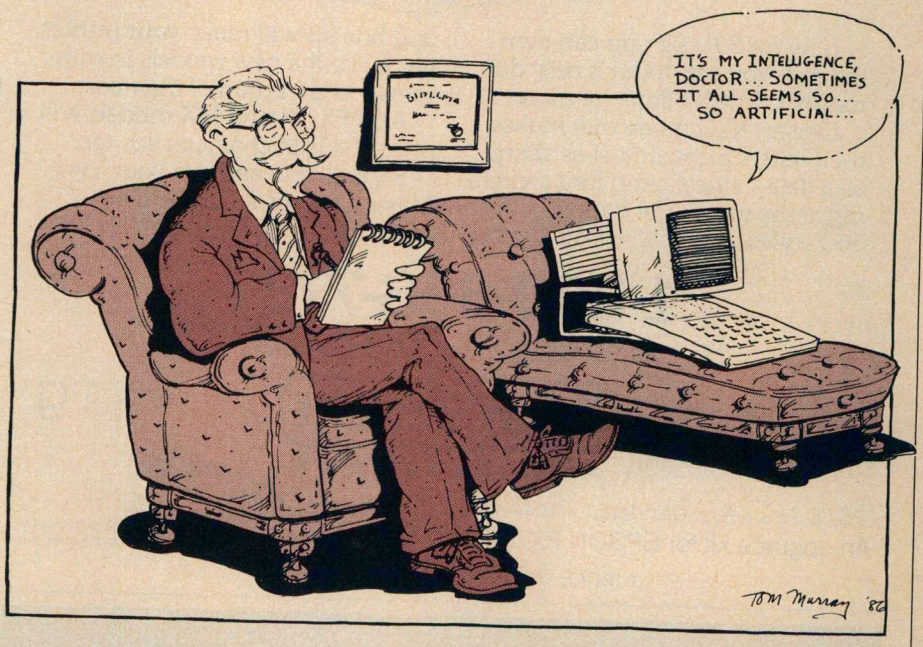

WHERE'S THE BREAK KEY?

Q. *The manual for my on-line information service tells me to press the Break key to cancel an operation. Which key is this on my Apple IIe's keyboard?*

Pamela Lehmann
Sydney, Australia

A. Before I answer your question, I should point out that a Break key does not generate an ASCII character code when you press it. Nor does it affect the code that enters when you press a character key, as the Shift, Caps Lock, and Control modifier keys do. What a Break key does is affect the output level of the serial-interface line to which your modem connects; in particular, it holds the line in a low state for about 234 milliseconds to generate what is called a break signal.

Most commercial information services and some bulletin boards react to a break signal by canceling whatever operation may be in progress, such as the listing of a document file. The effect is much like pressing Control-C to interrupt the running of an Applesoft program on your IIe. The information service often interprets a long break signal, three or four seconds in duration, as a Hang Up command.

You usually find Break keys only on the keyboards of dedicated communications terminals—no Apple keyboard has them. Most Apple communications programs, however, let you send a break signal by entering a control character or by pressing a key while holding down the open-apple key. —*GBL*

APPLEWORKS CUSTOM-PRINTER TRICK

Q. *I am using AppleWorks on my Apple IIe with a Grappler+ parallel card and a Texas Instruments Model 8j55 printer. The printer works fine, except that I cannot print superscripts or subscripts. My printer command for a "reverse one-half linefeed" is Escape ^, and the caret happens to be the command in AppleWorks that lets the program know that I am finished entering my printer code. When I try to enter the code, all I end up with is Escape and nothing following it. Is there a way to change my AppleWorks program so I can enter Escape ^ as a printer-control command (and something other than the caret as a way of finishing the code)?*

Jeff Hunn
North Manchester, IN

A. You cannot change the AppleWorks program to let you enter something other than a caret as the Exit command for printer-control codes. There is a solution to the problem, though, and all AppleWorks users will find it handy for sending printer codes from the word-processing module.

When you add a custom printer in the AppleWorks printer setup, choose the Printer Codes option. Simply press the Escape key when you are asked to type the exact control characters for Boldface Begin.

That's it—just the Escape key (which is what you were getting all along). Now reboot AppleWorks. When you are ready to issue an Escape code from the word-processing module, simply invoke Boldface Begin from the Print Options menu (open-apple-O) or by typing Control-B.

Setting Boldface Begin sends your Escape code to the printer. Of course, Escape, by itself, does nothing, but AppleWorks also sends the character immediately following the Escape code to the printer. If you want to send Escape-Q, just make sure that the Q immediately follows the Boldface Begin mark (which is a caret). Your document will look like this:

. . . afterward, Mr. Jones was noted to have taken ^Q six bottles out the door.

The caret designates Boldface Begin. Believe it or not, the Q does not print in your document but goes to the printer as part of the Escape code. The printer receives Escape-Q. You can send any Escape code this way—even Escape ^ or codes that require more than one parameter, such as Escape K5, which switches

ILLUSTRATION BY TOM MURRAY

colors on the ImageWriter II printer.

After discovering this trick, I've never used any AppleWorks printer function except Boldface Begin and the appropriate parameter. Anyone who's having problems with printer functions through AppleWorks should try this trick for sending printer codes. It just might solve your problems. —*CVB*

II PLUS/IIe SPREADSHEET PROGRAM

Q. *Do you know of a low-cost spreadsheet program that works on both the Apple II Plus and the Apple IIe?*

Larry Krajewski
LaCrosse, WI

A. The International Apple Core has just the program for you. It's called IACalc, it costs only $39.95, and you can return it within 30 days of purchase if you discover it won't do the job for you. Contact IAC at 2278 Trade Zone Blvd., San Jose, CA 95131; (408) 262-9419. By the way, IACalc is sold, or has been sold, by several other publishers under names you may find more familiar: AceCalc, MagiCalc, FlashCalc, and THE Spreadsheet. Its author, William Graves, is clearly the master of the nonexclusive software-publishing agreement. —*GBL*

ProDOS ON THE APPLE III

Q. *Is it possible to run Apple II ProDOS-based software on an Apple III?*

Jari Louhelainen
Helsinki, Finland

A. When I first received this letter, the answer was no: When you run an Apple III in the Apple II emulation mode, the memory ProDOS occupies is not available—Applesoft uses it instead. Since the release of the III Plus IIe Card by Titan Technologies (310 West Ann Street, Ann Arbor, MI 48104; [313] 662-8542) in early 1986, however, it has been possible to run ProDOS and to emulate a IIe as well. The III Plus IIe Card occupies two of the II's four expansion slots (see "Apple III Alter Ego," *A+*, July 1986, pages 42–46).

Note that the III's native operating system, SOS, uses disk-directory and file structures identical to those ProDOS uses. Thus, one operating system can easily access data files the other has created. In fact, if you have the proper boot files on a diskette, you can boot a SOS- or ProDOS-formatted diskette on either the Apple II or Apple III. —*GBL*

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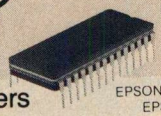

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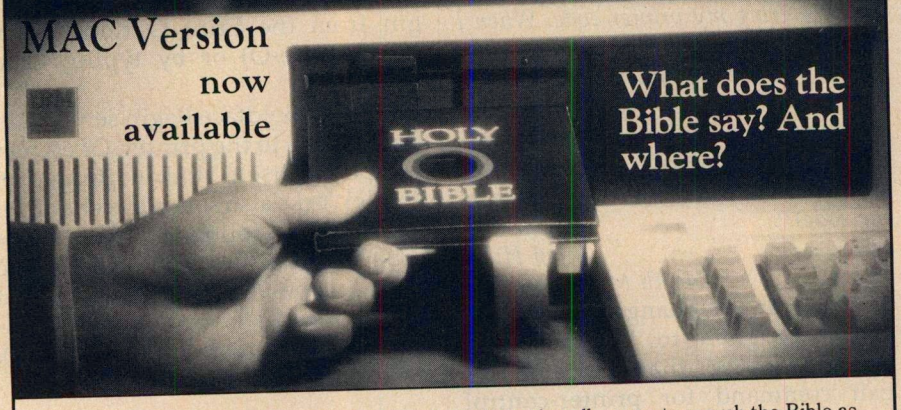

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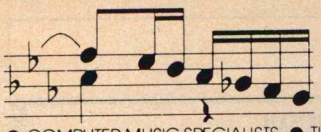

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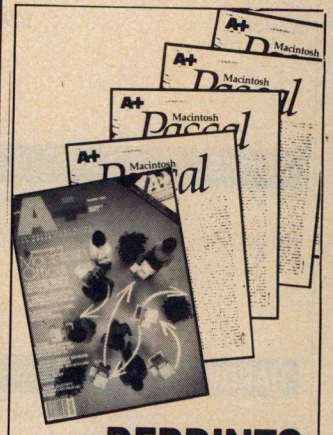

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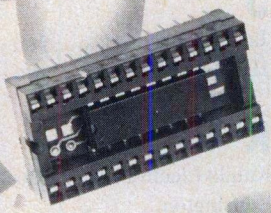

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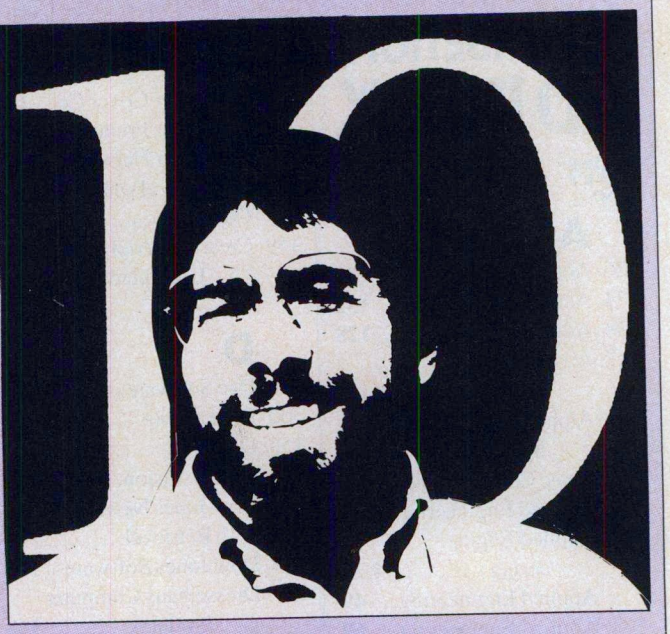

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Apple IIc	B	I
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Other (specify)	F	M
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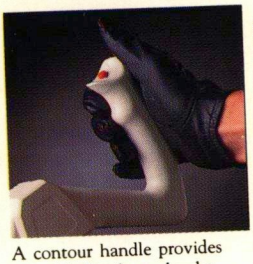

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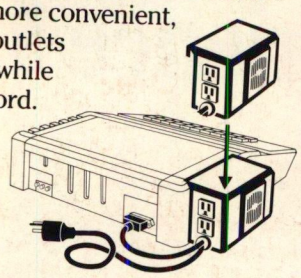

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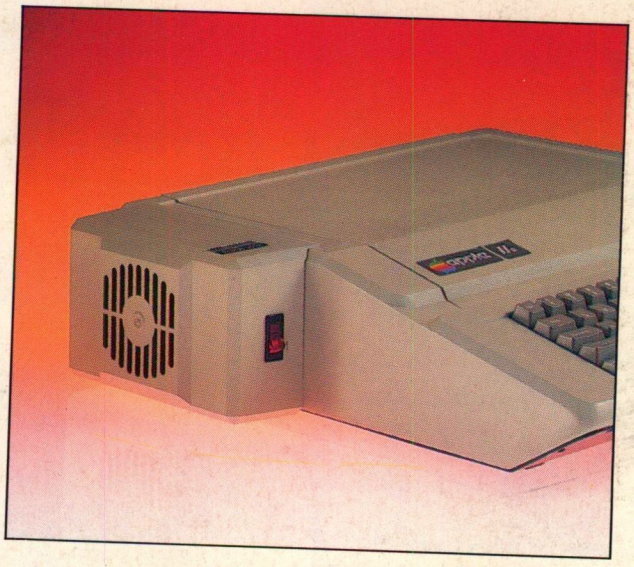

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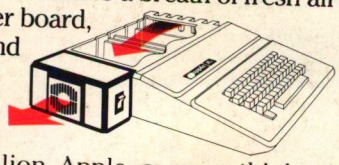

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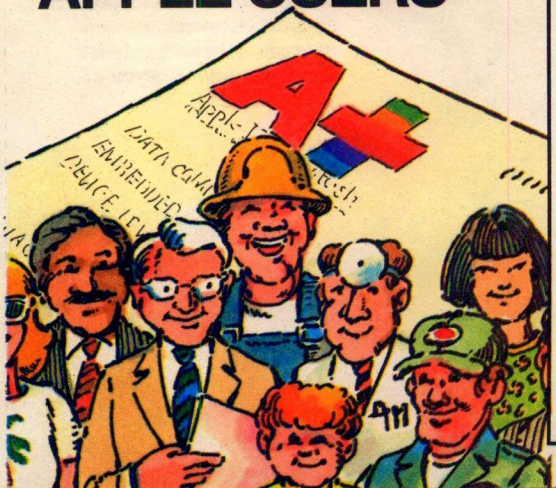

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